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**ASARCO East Helena Facility
Site Work Plan
Sinter Plant Decontamination and Demolition**

Prepared for:

ASARCO LLC

and

Montana Department of Environmental Quality

Prepared by:

**Envirocon, Inc
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February 2006

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1.0 INTRODUCTION

ASARCO LLC (ASARCO) and the Montana Department of Environmental Quality (MDEQ) entered into a Consent Decree (Decree), on February 15, 2005, to resolve alleged violations of the Montana Hazardous Waste Act and Administrative Rules of Montana. Section IV of the Decree requires ASARCO to develop and implement a yearly Work Plan designed to remove, store, and properly dispose or recycle all remaining hazardous waste and recyclable materials from identified process units located within ASARCO's East Helena Plant. In accordance with the Decree, this Site Work Plan has been developed to describe the specific decontamination, waste removal, and demolition activities associated with the razing of the Sinter Plant process unit scheduled for the first half of 2006.

2.0 SITE INFORMATION

2.1 Physical Site

The ASARCO East Helena Plant is located in the Helena Valley immediately west of Prickly Pear Creek. The community of East Helena is located immediately to the north. The physical address of the site is:

ASARCO LLC
100 Smelter Road
East Helena, MT 59635

The ASARCO East Helena facility is bounded on the west by agricultural property, on the east by Prickly Pear Creek and agricultural property, on the north by Montana Highway 12 and the town of East Helena, MT, and on the south by Prickly Pear Creek and agricultural property. The entire East Helena site covers approximately 141 acres. A site plot plan is provided in Appendix 6.1.

The main operational areas and process locations within the East Helena Plant consist of:

- Ore Storage
- Ore Receiving
- Sinter Plant
- Acid Plant
- Blast Furnace
- Dross Plant

- Water Treatment
- Non-Production Areas (laboratory, equipment storage, material storage and maintenance shops)

2.2 Site History

The ASARCO East Helena Plant (the "Plant") was constructed in 1888 by the Helena and Livingston Smelting and Reduction Company for the purpose of processing ores from local mines. In 1899, the American Smelting and Refining Company, today's ASARCO LLC, was formed with the East Helena Smelter being one of the original units.

The East Helena Plant was a custom, primary lead smelter, which produced lead bullion from a variety of both foreign and domestic concentrates, ores, fluxes, and other non-ferrous metal-bearing materials. In addition to the production of lead bullion, the plant also produced by-products including sulfuric acid and a copper-bearing material called speiss. The plant recovered zinc until October of 1982.

In April 2001, ASARCO indefinitely suspended operations at the East Helena Plant. While the production operations at the facility have been suspended, the major structures of the facility are still in place.

3.0 Work Summary

The work to be performed under this Site Work Plan includes the decontamination and demolition of the Sinter Plant and associated conveyors and air ventilation ducting. The lead contaminated dust/debris generated during the project will be transported and stored in a designated onsite facility that meets 40 C.F.R 265 Subpart DD, Containment Building requirements. The Concentrate Storage and Handling Building (CSHB) located west of the Sinter Plant is an example of such a facility. The storage of removed material will take place while awaiting construction of an on-site Corrective Action Management Unit (CAMU) Phase 2 Cell.

The work also includes the recovery of recyclable metal assets (e.g. steel) as well as the proper disposal of asbestos containing materials (ACM) generated during the Sinter Plant work. The major work tasks include:

- Utility protection
- Storm water protection and runoff control
- Lead dust removal
- ACM abatement
- Demolition of conveyors, equipment and structures

- Recycle recoverable steel

4.0 Scope of Work and Methodologies

4.1 Mobilization and Set Up

The first task involves mobilizing necessary personnel and equipment to start the project. The initial phase of mobilization will include those resources required to perform the lead dust removal and building cleaning. Prior to initiating work, Envirocon will establish staging areas, personnel decontamination facilities, exclusion and reduction zones, and traffic control. In addition to these functional support areas, Envirocon, Inc. (Envirocon) will establish office and administrative facilities and other support items such as restroom facilities and an equipment maintenance area.

See next page

4.2 Utility Isolation and Protection

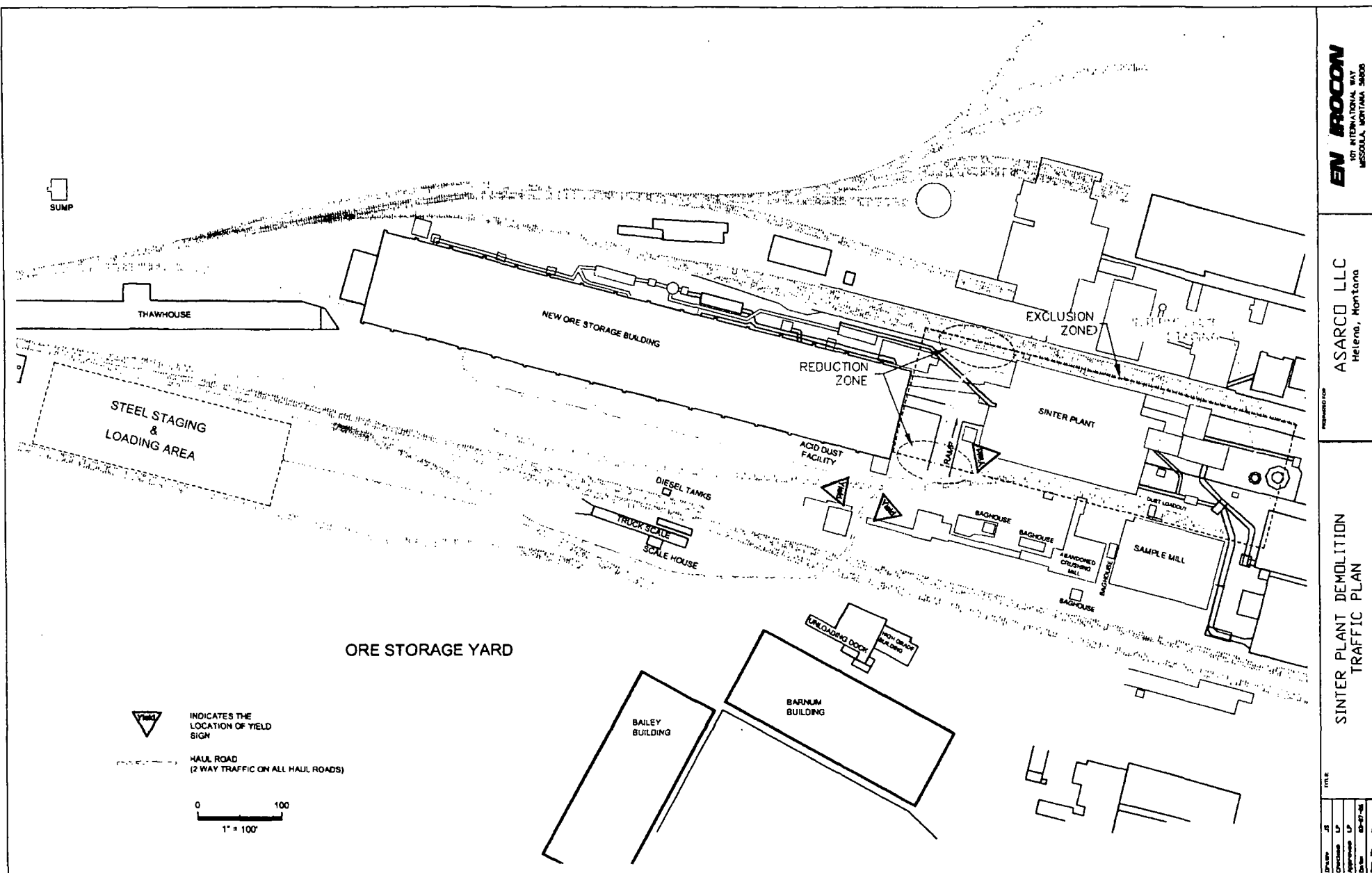
All utilities associated with the Sinter Plant building will be isolated and disconnected prior to the start of demolition activities. Existing power and water may be used during the dust removal and asbestos abatement phases.

4.3 Storm Water Protection

In the central plant area, storm water runoff from approximately 28 acres (nearly all paved) is routed to the internal plant water handling system. Storm water runoff does not have the potential to contribute to offsite areas. The Sinter Plant is situated within this area, which will minimize the potential for water runoff. Storm water and runoff within this area will flow to the plant water system for treatment via the High Density Sludge (HDS) plant prior to discharge into Lower Lake. Potentially impacted drains adjacent to the Sinter Plant will be protected as necessary to prevent contaminants from entering the system. Storm water catch basins potentially impacted by this Site Work Plan will be identified and marked. Envirocon will then install appropriate filter units in each of the identified catch basins. The filters will remove the solids while allowing the storm water to continue to the existing storm water containment and treatment system prior to discharge.

4.4 Lead Dust Removal and Building Cleaning

The removal of lead dust/debris from the interior of the Sinter Plant structure will be accomplished primarily with industrial vacuum(s). Two crews will use manlifts and ladders to access high areas and will work in a top down fashion to vacuum



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 MISSOULA, MONTANA 59808

ASARCO LLC
 Helena, Montana

**SINTER PLANT DEMOLITION
 TRAFFIC PLAN**

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BY	JL
CHECKED	LP
APPROVED	LP
DATE	02-07-08
SCALE	AS

accumulated dust and debris. The work will proceed methodically from one end of the sinter plant to the other until the entire interior space has been cleaned. The intent of the building interior cleaning is to reduce the potential for fugitive dust emissions during the demolition and dismantling phase. This gross decontamination operation will remove the bulk of accumulated dust from within the building. The remaining residues will be managed during the demolition using dust control measures described herein.

The possibility of utilizing water to wash down interior spaces is not likely due to weather constraints. However, should weather allow, the use of water may be a more thorough and efficient cleaning method. The use of water will be considered if freezing temperatures are not expected to impact operations and containment and control of water is reasonably manageable. Potentially impacted drains will require protection prior to the use of water.

4.5 ACM Abatement

IRS Environmental will be providing asbestos survey and removal services (including obtaining the required NESHAPS permit) as a subcontractor to Envirocon. At this point in time, an asbestos survey has not been completed on the Sinter Plant. Therefore, the full scope of asbestos removal has not been defined. The survey will be performed as the first task under this work plan in order to fully define the asbestos abatement and management requirements of this project. For the purposes of this work plan, the removal of asbestos containing building siding material is described. If further asbestos removal is required as determined by the survey, MDEQ will be notified and work plans will be submitted as required. *- see next page*

The ACM removal methodology involves protecting perimeter areas with plastic and then removing individual siding panels down to the ground for proper management. Specifically, a 10 - 20 ft. drop sheet will be placed extending from the base of panel surface to work area perimeter. This will serve as containment. Appropriate signage (2" "DANGER ASBESTOS" tape) will be posted in the area to restrict access for non-certified asbestos workers. Prior to removal, each panel of siding will be wet using water. The panels will be detached from the building by cutting each individual bolt with hand cutters or power tools. After the bolts have been cut, each panel will be carefully removed and lowered to the ground using manlifts, forklifts, or cranes.

As the panels are lowered, they will be immediately placed into a double 6mil poly lined dumpster or truck, wetting each panel as they are stacked in the container. All trucks/containers will be sealed with duct tape and or spray glue to create a "burrito wrap" and labeled with "Dangerous Asbestos" stickers. The asbestos waste will then be transported to the CSHB for storage and future disposal in on site CAMU.

**ASBESTOS INSPECTION PRIOR TO DEMOLITION
OF CYCLONE EXHAUST DUCT
ASARCO LLC – 100 SMELTER ROAD
EAST HELENA, MONTANA**

1.0 INTRODUCTION

IRS Environmental of WA, Inc has completed an asbestos inspection prior to structure demolition at the above referenced subject site. The on-site inspection for asbestos containing materials was completed February 21 & 22, 2006 at the request of Clifford Boyd of Envirocon. The on-site visit was conducted by Darin Dietz, a certified Montana Building Inspector under Title 17, Chapter 74.3, Subchapter 3, of the administration Rules of Montana for accreditation. (Certification No. MTA - 1177). This report presents the asbestos survey methods, findings, and a review of options for materials subject to building demolition activities.

Asbestos containing materials are those which contain more than 1 percent asbestos as determined by U.S. Environmental Protection Agency (EPA) methods using Polarized Light Microscopy (PLM) (40 CFR, Appendix A, Subpart F, Part 763, Section 1).

2.0 PURPOSE AND SCOPE

Various local, state, and federal regulations govern the use and management of asbestos containing materials (ACM). The codes are generally focused on preventing airborne emissions of asbestos fibers and addressing public and worker health concerns for exposure to asbestos during renovation and demolition projects.

3.0 SUSPECT MATERIALS TESTED FOR ASBESTOS CONTENT.

The number of samples taken for any surfacing material is determined by CFR Part 763.86, which requires:

- 3 samples for each material that is present in quantities of 1,000 SF or less.
- 5 samples for each material that is present in quantities of 1,000 - 5,000 SF.
- 7 samples for each material that is present in quantities of greater than 5,000 SF.

The following materials were tested for asbestos content:

- Vibration Dampers on exhaust ducts
- Silver paint from cyclone exhaust duct

- Gasket material from blower housing

4.0 SUBJECT SITE DESCRIPTION

The cyclone exhaust duct is located on the property of the Asarco Lead Smelter. Asarco is located at 100 Smelter Rd, East Helena, Montana. The Asarco Lead Smelter site includes a lead smelter that operated from 1888 until 2001. The cyclone exhaust duct is constructed of a cement foundation, steel beams with a steel round duct. The ducting starts at the Sinter Plant and the Coke Hopper Building and ends at the Baghouse and Cottrell Building. There are two fan units at the end of the exhaust flume before it enters the building.

5.0 SURVEY METHODOLOGY

The scope of services included identification of any suspected ACM within the specific areas that will be impacted by upcoming demolition and debris clean up activities, to bulk sample and analyze those suspect materials and to provide a report of findings. A general walk-over examination was initially completed to plan the asbestos survey, identify functional spaces and areas (spatially distinct areas within the work area), and to develop a sampling scheme for homogeneous areas of suspected ACM.

Bulk samples were collected in a representative manner based on suspected material contents, as defined by regulatory codes or guidance's for sampling methods and as applicable to the planned demolition activities. The samples were placed into air-tight plastic bags provided by the laboratory. The samples were taken under chain-of-custody protocol to Mountain Laboratories of Spokane, WA. Mountain Labs, Inc. is an NVLAP accredited laboratory for the analysis of bulk materials using PLM.

6.0 REVIEW OF RESULTS - ASBESTOS CONTAINING MATERIALS

The following represents a tabulation of materials which were found to contain asbestos during the preparation of this survey and the results of their analysis.

<u>Sample #s</u>	<u>Material Description/Area</u>	<u>Content</u>	<u>SF/LF</u>
S056-S058	Gasket material from blower housing	2-3%	28 SQ FT

7.0 REMARKS

This report represents IRS Environmental of WA, Inc., findings and conclusions based on the scope of services agreed to by the client and within the client's schedule and budget. All findings are based on readily available and reasonably ascertainable information on site conditions at the time of the survey and for the known regulations in affect at that

time. The services provided include professional opinions and judgments based on readily available information, field observations and measurements, and analytical reports by an independent laboratory. These results have been influenced by the specific conditions and limitations of the AHERA Building Inspector certification and by professional judgment and opinion.

The bulk samples collected in connection with this survey only indicate the presence or absence of the investigated contaminant within the discrete sample units. Although the sample was collected from an area most likely to be affected by the contaminant and accessible to the inspector, affected areas may exist in areas not sampled or for potential contaminants not selected for analysis and characterization. Any analytical results included in this report should be considered only as indicators of possible site conditions with specific statistical significance and influenced by sampling technique and laboratory methodology.

8.0 LIMITATIONS OF THIS REPORT

We have prepared this report to aid in evaluating this property for demolition. This report is for the exclusive use of Envirocon, Inc., Asarco and IRS Environmental. This report applies only to the subject detailed above and shall not be relied upon by any other party without the prior written consent of the inspector that prepared the report.

IRS Environmental work is performed in a professional manner with the best interests of our client in mind. IRS Environmental objective is to perform our work with care, exercising the customary thoroughness and competence of professionals in the relevant disciplines, in accordance with the standard for these services at the time and location those services are rendered.

It is important to recognize that even the most comprehensive scope of services may fail to detect environmental liability on a particular site. Therefore, IRS Environmental cannot act as insurers and cannot "certify or underwrite" that a site is free of environmental contamination and no expressed or implied representation or warranty is included or intended in our reports except that our work was performed within the limits prescribed by our client, with the customary thoroughness and competence of our profession.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in this area at the time this letter was prepared. No other conditions, expressed or implied, should be understood. Nothing in this report should be interpreted as legal advice; the information contained here is for information only.

Darin Dietz
Montana Building Inspector Certification No. MTA-1177
Expires 11/17/07

**9.0 SAMPLE LIST OF MATERIALS THAT MAY BE PRESENT AND HIDDEN
ON ANY CONSTRUCTION, DEMOLITION OR RENOVATION SITE**

- Window glazing
- Stucco
- Cement pipes
- Cement board/transite
- Duct tape/paper
- Furnace insulation
- Vinyl sheet flooring/mastic
- Vinyl floor tile/mastic
- Poured flooring
- Pipe insulation/fittings
- Plaster/wall joints
- Textured paints/coatings
- Ceiling tiles/panels/mastic
- Spray-applied insulation
- Blown-in insulation
- Fireproofing
- Sink insulation
- Packing materials
- High temperature gaskets
- Lab hoods/table tops
- Sink insulation
- Elevator brake shoes
- Asphalt flooring
- Paper on backside of fiberglass insulation
- Erkot roofing material
- Laboratory fume hoods
- Construction mastics
- Joint compound/wallboard
- Ductwork flexible connections
- Acoustical ceiling texture “popcorn”
- Electrical cloth
- Electrical wiring insulation
- Roofing shingles
- Built-up roofing
- Base flashing
- Rolled roofing
- Caulking/putties
- Incandescent light fixture backing
- Brick mortar
- Vinyl wall coverings
- Vapor barrier
- Cement roofing shingles
- Silver roofing paint
- Nicolet (white) roofing paper
- Sub flooring slip-sheet
- Mudded pipe elbow insulation
- HVAC duct insulation
- Boiler/tank insulation
- Breaching insulation
- Paper firebox in walls
- Fire doors
- Fire blankets
- Fire curtains/hose
- Electrical panel partitions
- Chalkboards

***Note:** This list does not include every product that may contain asbestos. It is intended as a general guide to show which types of materials may contain asbestos.*

10.0 SUGGESTED PROCEDURE FOR COMMUNICATING SURVEY FINDINGS TO AFFECTED PARTIES.

The results of this survey should be posted on site for to ALL CONTRACTORS AND SERVICE PERSONNEL to see. A copy of this report should be provided to all persons who may come in contact with materials that are known to contain asbestos. The following is a signed acknowledgment to be collected and signed by anyone who is provided a copy of this report.

I acknowledge that I have read and understand the report titled:

**ASBESTOS INSPECTION PRIOR TO DEMOLITION
OF CYCLONE EXHAUST DUCT
ASARCO LLC – 100 SMELTER ROAD
EAST HELENA, MONTANA**

I further acknowledge that hidden asbestos materials (refer to list contained in section 9.0 of this report) may exist in concealed areas that may be exposed during demolition and clean up activities. If suspect materials (refer to list contained in section 9.0 of report) are discovered that have not been tested, I will treat these materials as asbestos until additional testing proves otherwise.

Firm Name _____
Signature _____ **Name** _____
Title _____
Address _____
Phone No. _____ **Date** _____

4.6 Demolition

The Sinter Plant process unit is an integrated facility, connected to adjacent process areas by utilities, conveyors, and ventilation ducting. The dismantling of the building will require separation (in some cases removal) of this ancillary process equipment. A description of the separation and removal of this equipment is included below to assist in defining the scope of the Sinter Plant removal:

1. The conveyor galley that runs from the CSHB to the Sinter Plant will be demolished at the south end of the CSHB. The overhead duct and associated structural support that runs from the M.C.C. Building to the Sinter Plant will be demolished at the structural support nearest the M.C.C. Building.
2. The conveyors from the Coke Hopper, including coke hopper and sinter hopper, to the Cement & Dust Storage Tanks and the # 4 Pan Conveyor, including f-belt and e-belt, and associated structural supports, will be demolished. The Cement & Dust Storage Tanks will remain in place.
3. The overhead ducts, blowers, and associated structures that run from the Sinter Plant to the bag house and Cottrell Building will be demolished. The overhead duct will be demolished near the Dust Load-out Structure and the Dust Load-out Structure will remain in place.
4. The overhead electrical rack and associated structural supports that run from the CSHB to the Sinter Plant will be demolished as close as practical to the CSHB.
5. The two overhead ducts and associated structures running from the Sinter Plant to the bag houses located next to the Abandoned Crushing Mill will be demolished at the bag houses.
6. The electrical power lines will be de-energized and disconnected as near as practical to the Sinter Plant. The extra electrical wire will be left intact to the power poles and stored outside of the demolition project.

Prior to the start of the dismantling operations, all structures designated for removal, will be fully isolated. This work includes, but is not limited to, the physical separation of conveyor belts and housings, ventilation lines, equipment connections, and all utilities (electrical, water, gas, etc.) as described above. This isolation will be completed by mechanical and hand work methods. This will include the use of hot work activities where the structural connections will be separated by means of a torch.

The heavy structural dismantling work will begin with the removal of the Sinter Returns Tower. Mechanical shears will be used to undercut the front legs of the structure, and then securing the top, the structure will then be lowered down in a controlled manner. The structure will then have all material sized into manageable pieces and then cleared from the work area.

The Sinter Plant building will be dismantled systematically based on it's construction. The building can be divided into three sections that run length-wise (north-south). The removal process will address each one of these section separately. Starting with the western face of the Sinter Plant structure, the siding will be removed followed by the first one-third of the structure. This work again would be completed with the use of mechanical shears. The material generated during this operation would be sized for handling and then removed from the work area.

The next phase of the removal will focus on the center section. Working from south to north, the mechanical decks and structure would be crippled in bay size sections. These sections would be lowered down in a controlled manner and processed as work proceeded forward. Again, the material generated would be sized and removed in a continuous manner from the work area.

Upon completion of the center section, the final section would be started. The work would start on the south side and again move north. The structure would be crippled, then pulled and lowered down in a western direction into the existing footprint of the building. Material will be sized and removed out of the working area as it is generated. During the course of work, all mechanical and ancillary interior structures would be sized and removed out of the work area as well.

The work area by this time would only consist of small structural material that will be collected and removed. All remaining structural steel, piping or equipment that remains above the slab level would be torch-cut flush with the existing slab, and collected and removed from the work zone area. Any remaining debris would be collected and removed as well.

All structural steel will be segregated during the operation and all material deemed salvageable will be sized and loaded onto rail cars or trucks for removal to a recycling facility.

4.7 Waste Management

All wastes generated during this project will be placed in an onsite storage facility. The proposed storage location is the CSHB which is a contained building adjacent to the work area. All non-steel materials generated during the building cleaning and demolition will be directly transported to the CSHB for temporary storage.

4.8 Recycle/Salvage Steel

As recovered steel is generated, it will be moved to a recovered metal staging area. This area may be adjacent to the work area, or more remotely located depending upon the amount of additional processing needed or the type of equipment needed for the processing. At this staging area, the recovered steel will be "cleaned" as necessary and cut to dimensions specified by the purchaser of the recovered metals. Cleaning will be limited to a gross decontamination of steel to remove loose accumulations of dust and residue and meet the acceptance criteria of the buyer. Highly contaminated steel requiring more than a gross decontamination will be placed into the CSHB and managed as waste. Once properly cleaned and sized, the metal will be loaded into trucks or shipping containers as specified by the purchaser for transportation to locations specified by the purchaser.

4.9 Decontaminate Equipment

Once all tasks included in the scope of work have been completed, the processing areas will be properly cleaned up. This cleanup includes the removal of any process residues from the reduction operations and any residual materials generated during the implementation of the scope of work. Demobilization from the site includes the appropriate decontamination of equipment used in implementing the scope of work.

Following completion of the scope of work, all equipment used on the site will be decontaminated using dry decontamination techniques such as shoveling, brooming, and vacuuming. For work areas, dry decontamination techniques will be used as well. In all cases, a "no visible residue" criteria will be used for determining completion of decontamination. If a wet decontamination is required on equipment items, a temporary decontamination area will be established as described in the Environmental Protection Plan (see Appendix 6.4).

4.10 Demobilize

Upon completion of the scope of work described above, Envirocon will demobilize all personnel, equipment, and other resources from the site. Temporary facilities such as restrooms, storage trailers, and office trailers will be removed. All work areas will be cleaned up with trash, debris and miscellaneous items properly contained and disposed. Envirocon will coordinate with ASARCO regarding the status of all utilities impacted by the project prior to departure. All security passes, badges and/or keys will be returned to owner. A final walk through of all areas will be conducted to ensure the site is left in a condition satisfactory to the owner.

5.0 SCHEDULE

The overall timeframe for completing the scope of work is estimated to be 6 months based on the following estimates to complete the major tasks listed below:

Lead Dust Removal and Building Cleaning

- 4 weeks

ACM Abatement

- 6 weeks

Demolition

- 6 weeks

Asset Recovery and Salvage (including loadout)

- 8 weeks

Decontamination and Demobilization

- 1 week

6.0 APPENDICES

6.1 Site Layout

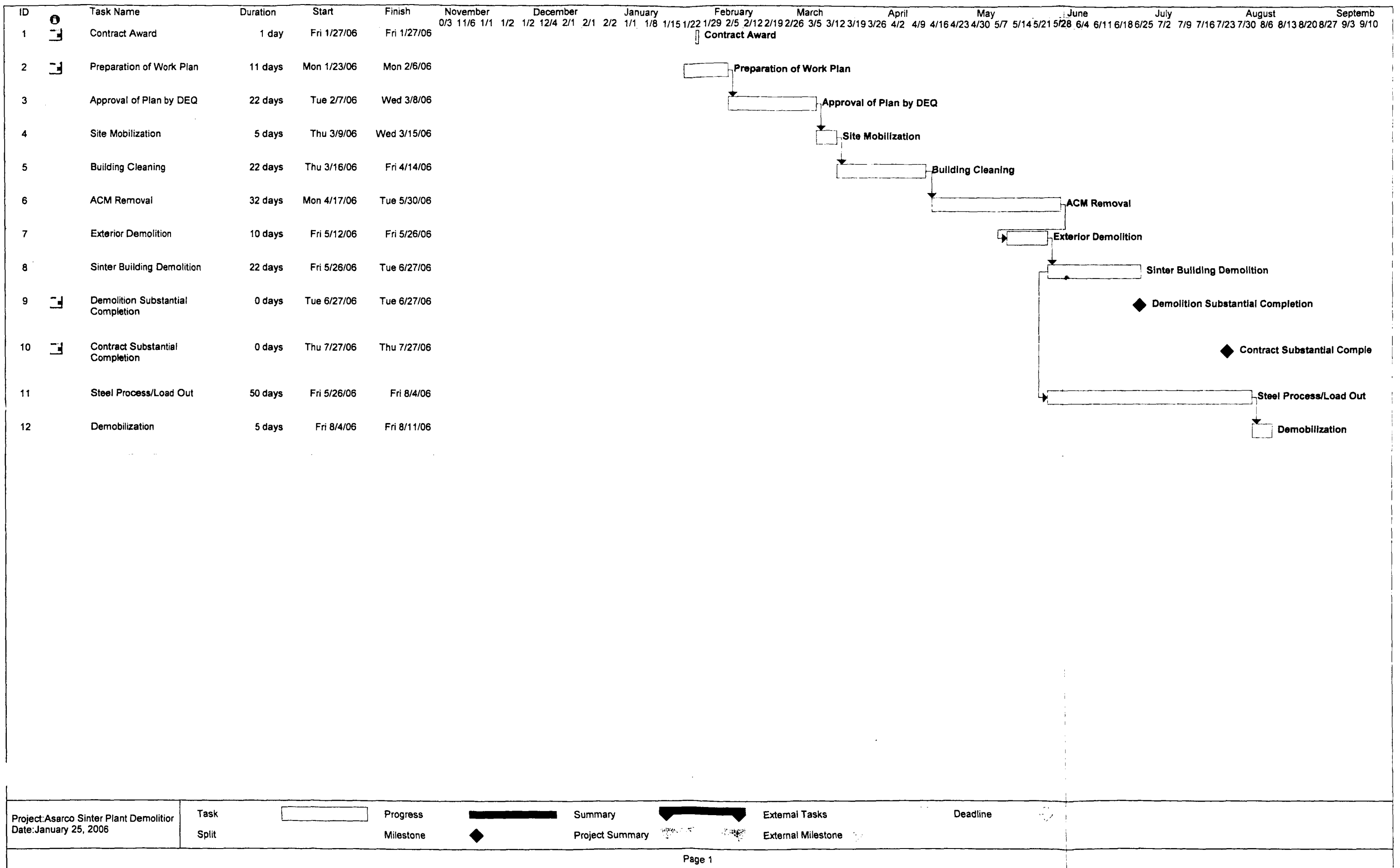
6.2 Health and Safety

6.2.1 ASARCO Health and Safety Requirements

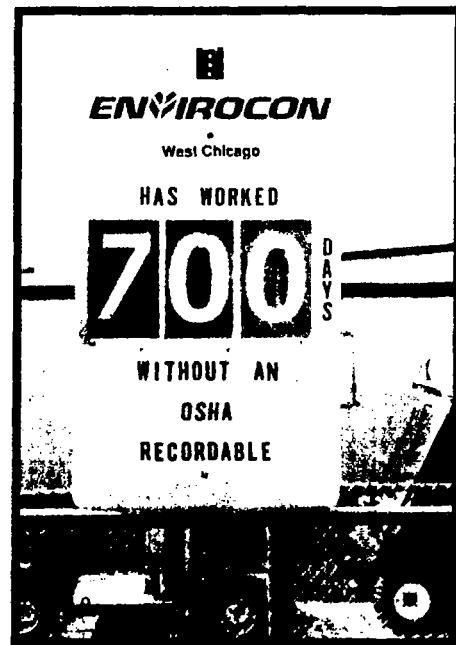
6.2.2 Envirocon Health and Safety Plan

6.2.3 Engineering Survey

6.3 Environmental Protection Plan



SITE-SPECIFIC HEALTH AND SAFETY PLAN



ASARCO East Helena Sinter Plant Demolition



Prepared For:

**ASARCO
100 Smelter Road
East Helena, MT 59635**

Prepared By:

**Envirocon, Inc.
101 International Way
Missoula, Montana 59802**

February 2006

ENVIROCON

HEALTH AND SAFETY PLAN ACKNOWLEDGMENT SHEET

I acknowledge having received a briefing on this health and safety plan, and that I understand the requirements of this plan, including the potential for random or for-cause drug and alcohol testing. I further acknowledge that failure to follow the requirements of this plan may result in removal from this site.

[illegible]

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APPENDICES

Appendix A: Voluntary Emergency Data Form

Appendix B: Route to Hospital

Appendix C: Demolition Procedures

Appendix D: Activity Hazard Analysis (AHA's)

A. SITE INTRODUCTION

This site-specific health and safety plan (HASP) provides safety-related information and requirements specific to the task and work location(s) described. General requirements contained in the Envirocon Health and Safety Program Manual along with this site-specific HASP will be implemented except where noted.

A.1. Scope

This Health and Safety Plan applies to the ASARCO East Helena Sinter Plant Demolition Project.

A.2. Site Description

The facility is owned by the American Smelting and Refining Company (ASARCO). One of the last operating lead smelters in the country, the East Helena Plant was shut down in April, 2001. The site is located 5 miles East of Helena on 100 Smelter Road, in Helena, MT. The 141 acre plant which opened in 1888, produced around 750 tons of lead bullion per day from ore, as well as the marketable by-product sulfuric acid. The site consisted of an ore storage and handling building, sinter plant, blast furnace, drossing operation, shipping facility and acid plant.

A.3. Description of Work

This project initially involves decontaminating the Sinter Plant. Lead dust contained throughout the Sinter Plant including the sinter machine, duct work, and conveyors will be removed by a combination of vacuum and wet wash. This cleaning shall remove the bulk of the loosely adhering lead dust and identified ACM. An asbestos abatement contractor, IRS will work with Envirocon on this task.

IRS will also begin removal of additional ACM from the Sinter Plant upon completion of building cleaning activities. The majority of ACM consists of Transite siding which is non-friable. ACM will be properly containerized and sent to an approved ACM disposal facility. Additionally a pre-demolition survey will identify fluorescent light tubes, mercury vapor bulbs, ballast, and PCB and non-PCB containing transformers and capacitors that will also be removed.

Once the building is confirmed "clean," demolition operations will commence. The scope of work will begin from the outside perimeter with removal of ducting, vessels, conveyors, and small out structures. Then work will commence towards the center with unobstructed engineered drops of larger structures. This work will be performed primarily by mechanical means using excavators with demolition attachments.

A.4. Tasks

The scope of work associated with this project includes supervision, labor, equipment and expertise to perform the following:

- Site mobilization tasks

- Pre-demolition survey;
- Building cleaning with vac trucks and wet methods, including removal of lights and switches;
- ACM abatement, including interior identified ACM and exterior Transite panels
- Demolition of exterior structures; including conveyor gallery, Sinter Returns Tower, Sinter Hopper, air system ducting, and Coke Hopper;
- Demolition of Sinter Plant facility; including structural support to Sinter Machine, building frames and structural supports.
- Sorting and transport of recyclable materials;
- Demobilization tasks.

B. BASIS

This section will discuss the basis in regulations, standards and policies for the project. It includes OSHA regulations and Envirocon policies and procedures.

B.1. Preparation and Approval

This plan is based upon existing available information regarding the site and upon past experience at other sites. This document is also based on OSHA regulations, contractual specifications applicable to the scope of work, the client's health and safety plans and procedures, Envirocon's Health and Safety Program, and Envirocon policies and procedures. This document describes the site-specific implementation of those policies and procedures. Envirocon personnel and lower tier subcontractors are required to adhere to all of these documents during the course of this project. Some of Applicable regulations and standards are described in Table B.3:

B.1.a. Prepared For

This plan was prepared for:

- ASARCO
100 Smelter Road
Helena, MT 59635

B.1.b. Prepared By

This plan was prepared by:

- Brian Vibbert
Envirocon, Inc.
101 International Way
Missoula, MT 59808

B.1.c. Approvals and Modifications

This plan and future changes must be approved as follows:

- 1) After preparation and approval by Envirocon, this plan will be submitted to the client's representative in accordance with the applicable contract and specifications.
- 2) Envirocon's designated Project Manager is responsible for the final approval of this plan before transmittal to the client.
- 3) Envirocon's Corporate Director of Health and Safety or designated representative is responsible for approval of this plan and any future modifications after preparation. Note: Certified Envirocon Safety and Health Professionals (CIH or CSP) are hereby designated to approve changes to this plan.

B.2. Incident-Free Performance of Work

Incident-free performance means error-free project execution: no injuries, illnesses, property damage, community or environmental impacts, or incidents that could have resulted in these occurrences under different conditions. Incident-free performance does

not happen by chance: It is achievable through the integration of safety into all management systems, the project process, and individual efforts. We believe that all incidents are preventable.

B.3. Policies and Regulatory Basis

Table B.3 Some Important Applicable Regulations and Standards	
Latest revision	Contract Specifications applicable to the scope of work.
29 CFR 1910.20	Access to employee exposure and medical records
29 CFR 1910.38	Employee emergency plans
29 CFR 1910.95	Occupational noise exposure
29 CFR 1910.134	Respiratory protection
29 CFR 1910.120	Hazardous waste operations
29 CFR 1910.151	Medical services and first aid kit
29 CFR 1910.157	Portable fire extinguisher
29 CFR 1910.1000	Air contaminants
29 CFR 1910.1200	Hazard communication
29 CFR 1926	Construction Industry Standards
29 CFR 1910.252	Lead
29 CFR 1910.1001	Asbestos

B.3.a. Changing Conditions

Changes in conditions and identification of previously unrecognized hazards are identified by the following processes:

- site inspections by supervisory and site safety personnel
- observations and suggestions by all personnel
- proper planning for each new phase of operations
- Activity Hazard Analysis (AHA) for each new phase of operations
- communicating plans and controls to all effected employees
- accident investigations and lessons learned from this and other projects
- contract modification

B.3.b. Response to Changes in Conditions

- 1) A risk assessment will be conducted in response to changing conditions.
- 2) This plan, AHAs, and/or other plans as necessary shall be changed as necessary to reflect the risk assessment.
- 3) Changes in plans will be authorized by responsible individuals.

B.3.c. HASP and AHA familiarization

The information presented in this plan will be reviewed with the employees during site-specific training to be completed before working on site. These site entry briefings will focus on the specific tasks of those being briefed. A copy of this plan will be available at all times on the site for any one to review thoroughly. As the project initiates new tasks on site, the crews for those tasks will be briefed on the appropriate AHA(s). AHAs will highlight applicable controls from this plan. All assigned personnel, visitors, and regulatory personnel are therefore expected to be familiar with and comply with all aspects of this plan. If the safety requirements are unclear each individual is responsible for getting clarification from their supervisor. The qualifications required for various tasks on this project are summarized in the training and qualifications section below.

B.4. Compliance

Failure to follow the rules and procedures prescribed in this document potentially jeopardizes the working environment of other employees. For this reason, Envirocon is prepared to enforce the progressive disciplinary procedures described in the site control section of this document for those who fail to follow the established policies and procedures for this project.

C. SITE ORGANIZATION AND KEY PERSONNEL

29 CFR 1910.120 requires an effective site organization to be responsible for supervision of all work at hazardous waste sites. The purpose of this section is to describe this site's organization as it applies to this project.

C.1. Project Manager: Leonard Pickett

The Project Manager is responsible for oversight and management of all aspects of the project including health and safety, quality assurance, construction, remedial design, equipment, and personnel.

- The Project Manager is responsible for project health and safety performance in accordance with Incident-free performance goals.
- Conducting periodic site inspections.
- Participating in incident investigations.
- Provides safety leadership through example and by holding all personnel assigned to this project accountable for their safety responsibilities.

C.2. Site Superintendent: To Be Determined

The site superintendent serves as the site's general supervisor in accordance with the requirements of 29 CFR 1910.120(b)(2)(i)(A). The superintendent is responsible for coordinating activities with the project manager and site safety officer. This includes:

- enforcing the provisions of this HASP;
- preparing for new tasks in advance of field operations in accordance with the Envirocon Field Operations Manual;
- ensuring that an AHA has been completed before any new work commences; and
- briefing crew members before assigning them to the new task;
- ensuring that employee safety suggestions are fairly and respectfully evaluated, and that employees are informed of the outcome of the evaluations;
- monitoring the conduct of operations in the field to ensure safe delivery of a quality product for the client;
- supervising subcontractors in accordance with this plan; and
- ensuring that injured personnel (with or without life threatening injuries) are escorted to medical treatment by the safety officer or other supervisory personnel.

C.3. Project Health and Safety Supervisor: Doug Tisdell

The Project Health and Safety Supervisor is the senior designated Health and Safety Officer (HSO) assigned to the project, and is responsible for the following:

- developing and implementing the Project Manager's site-specific health and safety program and procedures;
- providing professional technical support for the Project Manager with regard to all matters of health and safety associated with the project;
- technical supervision of the HSOs and technicians assigned to the project;
- assisting HSOs in developing and reviewing project health and safety procedures, hazard analysis and other supporting documents;
- implementing and administers this HASP;
- conducts periodic inspections and audits of the project site for the Corporate Director;
- coordinating all health and safety activities with the Project Manager; and
- in the event that personnel fail to adhere to established safety guidelines, recommending disciplinary and/or corrective actions to the Project Manager.

C.4. Site Competent Persons

OSHA's general safety and health provisions from the construction industry standards (29 CFR 1926.20(b)) include accident prevention responsibilities. Such programs shall provide for frequent and regular inspections of the job sites, materials, and equipment to be made by competent persons designated by the employers. OSHA's regulations regarding scaffolding, excavation and hazardous waste operations have similar requirements. The construction safety competent person is defined in 29 CFR 1926.32 to mean "one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them."

Competent persons are designated on the form that follows this section. Each competent person is given responsibility and authority for certain aspects of safety on site. It is important for each competent person to recognize the limits of their own knowledge, training, experience and capability. It is the responsibility of each competent person to act within the limits of their own knowledge, training, experience and capabilities.

C.4.a. Scaffold Competent Person (as designated in the table below)

Should scaffolds be needed this individual(s) will have direct supervisory control over all scaffold activities. All competent persons shall be authorized and acknowledge authorization in the table below.

1) Compliance standards

The scaffold competent person ensures compliance with 29 CFR 1926, Subpart L (1926.451 thru 453). Additional competent persons may be designated by the Project Manager in consultation with the Corporate Director of Health and Safety. Designation will be based on experience and knowledge of these standards.

2) Specific duties

- a) Supervises scaffold erections.
- b) Inspects scaffold repairs.
- c) Inspects scaffolds daily.
- d) The competent person is authorized by Envirocon to take corrective action to eliminate hazardous or dangerous situations. This includes halting operations and/or removing personnel from scaffolds.

C.5. Lower Tier Subcontractors

IRS will be Envirocon's primary subcontractor, and will be utilized for the building cleaning and ACM abatement. An additional contractor will be used for electrical disconnects, and has not yet been determined.

This safety plan does not necessarily address all of the hazards specific to lower tier subcontractors' work. Lower tier shall submit either a site-specific health and safety plan for their particular operation(s) or prepare and submit appropriate Activity Hazard Analysis(es) to append to this plan.

Lower Tier Subcontractors are responsible for supervising their work and personnel in accordance with this plan and applicable site policies and procedures. Regardless of other requirements, lower tier subcontractors shall adhere to all federal, state and local laws and regulations. In particular this includes the requirements of 29 CFR 1910.120/1926.65 HAZWOPER Standards. Lower tier subcontractors' personnel will be supervised in accordance with the same requirements and standards as Envirocon and subcontractor personnel. Where their programs, policies and procedures exceed the requirements of this document and the applicable site policies and procedures, the lower tier subcontractor may use their own policies and procedures to implement these requirements otherwise they must adopt this document.

C.5.a. Site Access Control

Site access and employee parking will be designated by ASARCO.

Envirocon is in part responsible for controlling access to this site along with our client. Envirocon reserves the right to deny access to personnel who pose a hazard to operations through serious, willful, or repeated violation of safety requirements; and those personnel who are not otherwise qualified to work on site.

Parking areas are provided for employee vehicles as designated by the client facility manager. Privately owned vehicles are prohibited from entering the work areas. Employees who illegally park in fire lanes, areas posted with no parking signs, handicapped parking spaces, or visitor parking spaces are subject to disciplinary action and removal of the vehicle at the workers expense.

C.6. Competent Person Designation Form

COMPETENT PERSON DESIGNATION		
<p>The following individual(s) has been designated as the "Competent Person," meaning one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who is hereby authorized by Envirocon to take prompt corrective measures to eliminate them.</p> <p>The person(s) named below has knowledge of the systems, equipment, conditions and procedures in relationship to the proper use, inspection, manufacturers' recommendations and instructions, and maintenance as designated below. This person(s) has been delegated the responsibility to coordinate all activities and operations as defined by the designation(s). In carrying out these responsibilities, it shall be the duty of the competent to act within the limits of their knowledge and training.</p>		
<p>Competent persons added to the list must be approved by the Project Manager and HSO.</p>		
NAME/DESIGNATION(S)	COMPANY	COMPETENT PERSON
	Envirocon	<input type="checkbox"/> Excavation, <input type="checkbox"/> Site Safety, <input type="checkbox"/> Scaffolds
<p>Project Manager's approval: _____; HSM/HSO Approval: _____</p> <p>Acknowledged: _____ Date _____</p> <p style="text-align: center;">Competent Person's Signature</p>		
	Envirocon	<input type="checkbox"/> Excavation, <input type="checkbox"/> Site Safety, <input type="checkbox"/> Scaffolds
<p>Project Manager's approval: _____; HSM/HSO Approval: _____</p> <p>Acknowledged: _____ Date _____</p> <p style="text-align: center;">Competent Person's Signature</p>		
	Envirocon	<input type="checkbox"/> Excavation, <input type="checkbox"/> Site Safety, <input type="checkbox"/> Scaffolds
<p>Project Manager's approval: _____; HSM/HSO Approval: _____</p> <p>Acknowledged: _____ Date _____</p> <p style="text-align: center;">Competent Person's Signature</p>		
	Envirocon	<input type="checkbox"/> Excavation, <input type="checkbox"/> Site Safety, <input type="checkbox"/> Scaffolds
<p>Project Manager's approval: _____; HSM/HSO Approval: _____</p> <p>Acknowledged: _____ Date _____</p> <p style="text-align: center;">Competent Person's Signature</p>		

D. SITE SECURITY AND CONTROLS

This section deals with site access and general project rules, physical security of the project work areas and the controls related to waste management and access to contaminated areas to ensure qualifications of personnel.

D.1.a. Public Safety and Security

Access to the site shall be limited to those personnel that are qualified and have an acceptable (in the judgment of the client facility's designated representatives and the Envirocon security manager) reason for being on site. Continuing access is further conditioned on adherence to the established site policies and procedures

The work areas associated with this project are within the confines of the site. Envirocon is responsible for controlling access to the project site and Sinter Building area, and any established exclusion zones or contamination reduction zones as follows.

The work area shall be suitably delineated (i.e., as appropriate for a construction site) in order to prevent unauthorized entry.

Visitors shall be directed to the project manager's designated representative to seek authorization when appropriate. Visitors shall be logged onto the site. Visitors that are not qualified for work in the EZ shall be escorted or otherwise prevented from accidentally entering the EZ.

All unattended equipment will be secured physically and mechanically during periods of non use. Keys shall be removed from equipment and stored in a secure location.

D.1.b. Unacceptable Conduct

Unacceptable employee conduct and/or violation of a project rule or requirement may be reason for disciplinary action up to and including suspension without pay, termination of employment, or denial of access to the work area or client facilities. Examples of unacceptable employee conduct and/or rule violation are as follows:

- Possessing, when not authorized, government, project, or other person's property or services, or theft of the same.
- Altering, damaging, or mutilating government, project, or other person's property.
- Violating the Security Rules.
- Reporting or badging for other employees or other identification misrepresentation.
- Making or stating false claims or falsifying reports or records.
- Refusing to submit to a search.
- Refusing to submit to drug and alcohol screening or testing or other similar inspections.
- Possessing or using alcoholic beverages, controlled substances, or weapons on any project.

- Using or possessing keys or other devices used for lock opening without specific permission.
- Sleeping on the project.
- Improperly using, or failure to use, toilet facilities.
- Failure or refusal to perform assigned work as directed.
- Fighting.
- Negligence resulting in an infraction of health and safety or project rules or requirements.
- Taking unauthorized work breaks.
- Engaging in horseplay of any kind.
- Engaging in gambling or the sponsoring of raffles.
- Not using trash receptacles or otherwise creating unsanitary conditions.
- Smoking, using tobacco, or eating in prohibited areas.
- Unauthorized cooking on the project.
- Selling food, beverages, or other items on the project.
- Failure to display identification badge or area access credentials in the proper manner and in a conspicuous place.
- Violating health and safety or project rules or requirements.
- Sexual harassment.
- Abusing equipment, vehicles or other Envirocon property or rentals.
- Operating equipment or vehicles without authorization and proper qualification.
- Failure to operate equipment or vehicles in the manner specified by the manufacture (including proper maintenance and repairs).
- Not reporting use of prescription drugs.
- Not reporting equipment or material damage.
- Not reporting an accident or incident.
- Displaying pornographic, sexually explicit or otherwise offensive photographs, calendars, or other materials that may be objectionable to other individuals or groups.

The above is not an all-inclusive list. If you are unsure what may constitute unacceptable behavior, ask your Supervisor!

D.1.c. Prohibited Articles, Materials, Substances

The use, possession, concealment, transportation, promotion, or sale of the following items or substances is prohibited on site premises. Employees who violate this policy

will be subject to disciplinary action up to and including removal from site and/or termination. Project management reserves the right to conduct drug and/or alcohol search and screening consistent with the client facility policy.

- Illegal, look-alike, designer drugs and drug paraphernalia
- Controlled substances, such as medications, when usage is abused
- Valid medications, when not kept in marked prescription bottles
- Alcoholic beverages
- Firearms, weapons, and ammunition
- Unauthorized explosives
- Stolen property or contraband
- Unauthorized cameras or photographic equipment
- Unauthorized recording devices

D.1.d. Substance Abuse

It is the policy of Envirocon to run a drug free workplace.

- 1) Envirocon's substance abuse policy and program description are contained in Procedure 1403.006, the detailed procedures for performing substance abuse tests are contained in the medical surveillance procedures (Procedure 1403.005M.f).
- 2) Personnel on site are subject to the following substance abuse testing in accordance with procedures described above:
 - a) Pre-employment and Pre-Project
 - b) Post-accident
 - c) Random
 - d) Reasonable suspicion

D.1.e. Discipline

Envirocon reserve the right to take disciplinary action at its discretion up to and including suspension or termination of employment or denial of access to the site work areas, depending on the severity of the violation.

- 1) At the discretion of Management, suspension with/without pay may be given in lieu of discharge.
- 2) Envirocon employees should refer to the Envirocon Employee Information Manual for policies and procedures related to employee conduct and disciplinary action.
- 3) Verbal warnings and written reprimands are forms of discipline used to document and intended to correct, undesirable actions.

- 4) Unacceptable conduct or failure to adhere to established policies and procedures willfully or repeatedly may be subject to removal from this project and/or termination.

D.1.f. Subcontractors

Subcontractors shall also adhere to established policies and procedures applicable to this project site.

- 1) Subcontractors are responsible for disciplinary actions regarding their own employees and their lower tier subcontractors.
- 2) Failure of subcontractor employees to adhere to policies and procedures as described in this document will result in verbal or written warnings to the responsible subcontractor.
- 3) Envirocon reserves the right to permanently or temporarily remove and bar subcontractor employees from the project site. Unacceptable conduct or failure to adhere to established policies and procedures willfully or repeatedly may result in such removal from the project site.

D.2. Communications

Personnel in the Exclusion Zone will remain in constant communication or within sight of the PM, or his representative. Two-way radio is the primary method of communication.

- 1) If radio communication and hand signals are not feasible:
 - a) The PM will identify the site activities that can continue without communication, if any; and
 - b) If necessary, one long air horn signal will be used to evacuate the site until communications have been restored.
- 2) Emergencies
 - a) One long or continuous horn blast.
 - b) Unless otherwise directed, all personnel will leave the Exclusion Zone.
 - c) The audible signals in Table D.2 using an air horn, will be used as appropriate:

Table D.2

Emergency Signals	
One long or continuous blast	Emergency including fire/explosion Evacuate unless otherwise directed
One short blast	Attention getter; stop work and assemble at CRZ
Two short blasts	All is clear

D.2.b. Exclusion Zone (EZ)

For the intent of this project, an exclusion zone may be established as the interior of the Sinter Building once cleaning activities have commenced.

The EZ is that part of the work area where, at a given time, workers may potentially come in contact with contaminated materials. This contact is generally defined as inhalation of airborne levels exceeding site-specific action limits or 50% of established exposure limits (OSHA or ACGIH). Contact also includes any ingestion, skin contact, injection, or other contact route of exposure to materials exceeding EPA or other established levels of contamination for the site.

D.2.c. Contamination Reduction Zone (CRZ)

The CRZ is that part of the work area between the EZ and support areas where contamination from the EZ is controlled in such a way as to remove the potential for contaminating support areas.

D.2.d. Support Area

The support area is that part of the work area where supporting tasks are conducted, and where the potential for exposure to contaminants has been fully controlled (i.e., personnel are not exposed to potential contact with contaminants).

D.2.e. Boundaries

Boundaries are established by the site safety and health officer based on the definitions above as compared to actual site conditions as monitored. Boundaries are flexible and should reflect current site conditions.

- 1) Boundaries are to be marked with suitable barriers such as yellow banner guards, brightly colored ropes, barricades, or orange snow fence to clearly establish the specified areas and the applicable regulations for that area.
- 2) If rope is used, pennants should be tied to the rope to help increase the visibility to foot and vehicle traffic and to provide a suitable warning.

D.3. Decontamination

The site safety officer is responsible for establishing and supervising decontamination on site. The following procedures are intended to establish guidelines for this purpose. As work progresses control zones may be altered. It is essential that the safety officer adjust this process as necessary to ensure that:

- personnel and equipment leave the site free of contamination, and
- contamination is not spread to other areas on site.

D.3.a. Personnel Decon Procedures

- 1) Entering Contaminated Area through Support Zone:
 - a) Pick up clean PPE and boots.

- b) All donning of clothing and equipment, taping, etc. is done here.
 - c) Equipment contaminated from the preceding day is to be picked up in the contamination control area when exiting the decon area.
 - d) Proceed to contamination control area.
- 2) CRZ:
- a) Prior to entering this area, be sure that all personnel protective equipment is in good working condition.
 - b) Conduct final inspection of tape and PPE.
 - c) Enter Exclusion Zone.
- 3) Exiting Exclusion Zone
- a) Personnel and equipment leaving the Exclusion Zone shall be thoroughly decontaminated.
 - b) The following protocols shall be used for the decontamination stations according to the level of protection as follows. Where a step involves an article that is not prescribed, skip the step.

	LEVEL C	LEVEL D
1	equipment drop	equipment drop
4	outer boot rinse	outer boot rinse
6	outer boot removal	outer boot removal
7	outer glove removal	outer glove removal
9	remove hard-hat	remove hard-hat
11	remove respirator	
12	wash respirator	
13	rinse respirator	
1	coverall removal	coverall removal
2	remove inner gloves	
3	wash hands and face	wash hands and face
4	don modesty garments	don modesty garments
5	hand dry and bag respirator	
6	Shower (if deemed necessary)	
7	change to street clothing	change to street clothing

D.3.b. Training qualifications summary

Table D.3.b summarizes the training qualifications for this project.

Table D.3.b TRAINING SUMMARY									
	HAZWOPER Training				site / Site Specific				
	40 hr with respirator training	24 hr	8 hr annual refresher	8 Hr Super- visor	Site HASP Briefing 2 hr ①	Asbestos Worker training ②③	lead, ACM standard	applicable AHAs	Daily safety briefings ④
Supervisors	X		X	X	X	X		A	X
Level C/B (i.e., with potential use of respirators)	X		X		X			A	X
Level D work only surveyors, engineers, mechanics		X	X		X			A	X
Work outside of EZ					X			A	X
Trailer staff					X				
Delivery personnel					E			A	
Work in regulated areas inside Sinter Plant (Lead):	X						A		
Asbestos regulated areas	X					X	A ^②		
Notes: X = required A = those that are applicable. E = escorted ① Approximate training time. ② AHERA training certificate/license required. Due to the nature of the tasks associated with this site, exclusion zones are not anticipated unless a change of conditions indicates exposures above action levels may occur. ③ Homeland defense security issues and plans training per 49 CFR 172.704 and 172.800.									

- 1) All personnel performing work at the client's site area will receive a briefing on the site Health and Safety Plan. This training must be acknowledged on the sign-up sheet at the front of this plan. Personnel will also undergo briefings on task specific hazard analysis.
- 2) Personnel entering the exclusion zone shall have a minimum of 24 hours of HAZWOPER training in accordance with 29 CFR 1910.120 or 1926.65.
- 3) Personnel required to wear respiratory protection will have a minimum of 40 hours of HAZWOPER training, to include respiratory protection training.
- 4) Personnel working in regulated areas (those areas where a specific OSHA standard applies to the work, such as asbestos, arsenic, lead, benzene) shall receive the training required by that standard.
 - a) Asbestos Standard (29 CFR 1910.1001, or 1926.58 as applicable)
 - b) Lead Standard (29 CFR 1910.1025, or 1926.62 as applicable)

- 5) Supervisors will have an additional 8 hours of supervisory training for work in the EZ.
- 6) Personnel required to have HAZWOPER training must be up to date on annual 8 hour refresher training.
- 7) Personnel performing support functions (i.e., work outside of the EZ) are not required to have HAZWOPER training but shall be briefed on this HASP and applicable hazard analysis.
- 8) Daily Safety Meetings. In order to maintain qualifications, it is necessary to have regular meetings in order to enhance planning efforts and to pass information from lessons learned or changes in procedures.
 - a) A “toolbox” or “tailgate” safety meeting will be held at least daily before starting work. Safety meetings will also be held when site conditions change, before starting new activities, and after accidents.
 - b) These daily meeting shall be used to keep personnel up to date on changes in plans and procedures since their initial training and also to ensure coordinated work assignments by outlining the day’s activities and job assignments.
 - c) Attendance is mandatory for all site personnel including lower tier subcontractors.
 - d) Meetings will also be used to discuss:
 - i. Topics of interest or concern of the crew,
 - ii. suspected hazards for that day’s work and what precautions are necessary to deal with these hazards.
 - iii. Necessary training requirements and site work rules
 - iv. Changes in work practices or environmental conditions
 - v. Precautions or safe work practices related to the day’s site activities
 - vi. New or modified site-wide procedures or requirements
 - vii. Incident alerts provided by the client
 - e) Documentation of daily safety meetings shall be maintained on site.
 - f) Daily safety meetings shall be used as a time for personnel to make safety suggestions. Suggestions shall be noted in the minutes and evaluated by supervisory and safety personnel. Actions taken on suggestions should be noted on the daily safety meeting form.
 - g) The daily safety meeting shall function as the project’s Environmental Health and Safety Committee. At the option of the project manager a separate committee may be established. Members shall be determined from nominations of the wage earning employees.

D.3.c. Medical Qualifications Summary

The following medical qualifications are required to perform work in certain areas.

Table D.3.c Summary of Medical Requirements							
TEST COMPONENT (1)	Level D Exclusion Zone (1)	Level C/B Exclusion Zone (1)	lead, asbestos zones (1)	Support Zone Workers (1)	Envirocon New Hires (1)(5)	Post- Accident/ exposure (1)	End of Project (1)(2)
Occupational History/update	X	X	X	(5)	X		(7)
Audiometric Exam	X	X	X		X		
Manual lifting protocol	X	X	X		X		
Lead protocol (29 CFR 1910.1025)			X(6)			(6)	(6)
Drug testing(1)					(5)	(4)X	
DOT Breathalyzer Alcohol Testing						(4)X	
Fitness to return to work (after work/non-work related injuries or illness).						X	
Fitness for Asbestos Remediation (29 CFR 1910.1001)			(6)X			(6)	(6)
Fitness for Hazardous Waste Work (29 CFR 1910.120) including liver functions		X	X			(1)	(7)
Fitness to wear respirators (29 CFR 1910.134)		(3)	X		(3)		
Basic Fitness For Duty (Level D, Construction, or non-HAZWOPER)	X	X	X	(5)	(5)		X

NOTES:

(1) GMG WorkCare provides medical monitoring for all Envirocon employees through local health care facilities. The appropriate protocol will be scheduled by an authorized Envirocon representative and should never be scheduled by the employee (except in the case of a medical emergency). Lower tier subcontractors and guest are required to produce their own protocols equivalent to those indicated and/or in accordance with the referenced regulatory requirements. Employee may be required at any scheduled exam, examinations conducted after accidents, randomly, or as part of facility procedures to donate specimens for drug and alcohol testing. Failure to conform to medical monitoring requirements, drug & alcohol, or other related requirements may be grounds for removal from site and termination of employment.

(2) This column refers to certain site-specific protocols. It IS NOT A TERMINATION OF EMPLOYMENT EXAM requirement. All Envirocon employees should be notified of potential eligibility for termination exams when they are terminated from employment. If they request such an exam, the Director of Health and Safety will review the request and determine eligibility under the Envirocon Medical Monitoring Program in accordance with 29 CFR 1910.120.

(3) Must be completed prior to wearing respiratory protection

(4) As determined by Envirocon policy and the Director of Health and Safety accidents, incidents, injuries, or illnesses involving medical evaluations, potential OSHA recordability, potential property damages in excess of \$500, involving damages or injuries to parties not affiliated with Envirocon shall be evaluated.

(5) New employees are hired provisionally based on their ability to pass the fitness for duty examination. GMG WorkCare makes the final determination regarding fitness for duty for Envirocon Employees (this includes all aspects of fitness for duty and drug testing results). New hires may begin Level-D work (i.e., this evaluation does not authorize work where exposures may exceed the action levels for chemical exposures) with the basic fitness for duty evaluation provided by the attending or examining physician. The examining or attending physician's evaluation is considered temporary (not to exceed 30 days) until final evaluation by GMG WorkCare's final evaluation.

(6) As indicated by air monitoring results. Not expected at this time.

(7) Employees that will be terminated at the end of the project and have not had a HAZWOPER physical within the last six months shall be offered a termination examination.

E. HAZARDS

An effective safety and health program includes a variety of processes for recognizing and evaluating hazards in order to plan controls. Hazard identification and evaluation must be a continuing process although the focal point is the planning phases of tasks.

E.1. Accident Prevention Program

Envirocon's Health and Safety Program Manual serves as the primary accident prevention program document in accordance with the requirements of 29 CFR 1926.20. This HASP further develops the site-specific procedures to prevent accidents at the site. Beyond these documents, the accident prevention program is an ongoing process which involves the participation of all personnel through hazard identification, hazard analysis and hazard control. Refer to Envirocon's Health and Safety Program Procedure 1403.014 "Correcting Unsafe Conditions and Work Practices."

E.1.a. Elements of the Accident Prevention Program

The accident prevention process at this site includes a number of ways to identify hazards and develop appropriate controls. They include the following programs and procedures.

- 1) Proper planning. There are a number of planning processes that take place prior to execution of a given task. Based on many other plans and programs, Envirocon and the client have developed a HASP for the site. The Field Operations Manual Procedure 1401.030 documents the project procedures for developing individual task plans.
- 2) Activity Hazard Analysis (AHA). AHAs are also referred to as Job Task Analysis (JTA) or Job Hazard Analysis (JHA). In order to avoid confusion with the JTA process described below, this HASP will refer to these as AHAs.
 - a) The planning and hazard assessment process continues into the individual job task through the use of AHAs. Many activities will be covered by the hazard analysis sections in this HASP. As the task planning process and lessons learned evolve during the course of this project, new activity hazard analyses shall be developed to address these changes as necessary.
 - b) The site health and safety officer contributes to the task planning process required by Field Operations Manual 1401.030 by preparing AHAs. The task plans should include a description of key controls from this HASP and AHAs.
 - i. In order to better manage change, duplication should be avoided.
 - ii. Example: There should not be two AHAs for excavation activities or an AHA duplicating a HASP section on excavations.
 - iii. The reason for this is to avoid confusion in instructing the crews involved. It also facilitates incorporating changes in procedures from lessons learned because multiple procedures do not need to be changed.

- c) AHAs shall be developed for all significant work tasks associated with this project. New tasks, or previously undeveloped hazards require a new AHA or redraft existing ones. AHAs are primarily a planning phase tool. As needed, this HASP may be modified in order to accommodate control requirements identified through the AHA process. AHAs/JHAs are developed in accordance with Health and Safety Program Procedure 1403.013.
- 3) Job Task Assessments (JTA). The planning and hazard analysis processes come together in their final details at the employee/daily level with the JTA.
 - a) JTA(s) should be considered drafts because it is intended to be changed and redrafted as necessary to meet the needs of the tasks being performed.
 - b) These forms are prepared by each work crew and approved by their foreman/team leader. To encourage employee participation, groups must be kept as small as possible.
 - c) Every front line supervisor (foreman/team leader) must prepare their own JTA(s) with their crew.
 - d) NOTE: The JTA form includes a block for identifying the 1401.030 Task Plan that the day's work is assigned to. This forms the continuity of planning from Project Work Plan, through Task Planning, and finally down to the daily crew planning.
 - e) Employee participation is key to the JTA process. Everyone on the team must sign their JTA. If task assignments change during the day, personnel should review the new team's JTA and sign it.
 - f) At the end of the day the Foreman submits the day's JTA(s) to the appropriate Superintendent (the one responsible for the 1401.030 Task Plan listed on the form). This completes the cycle of responsibility for planning because the superintendent can ensure that 1401.030 Planning continues to address all changes in work and planning needs.
- 4) Work place inspections. All supervisory personnel, safety officers, and competent persons shall conduct site inspections. Site inspections are intended to ensure that established plans and procedures are followed, changes in conditions are identified, effectiveness of controls are assessed, and new hazards identified.
- 5) Employee involvement. The active involvement of every employee is encouraged through the JTA process, site incentives program, "time out for safety" authority, safety observer program, and daily safety briefings. Employee involvement is the cornerstone of the Incident-free performance goal. This goal will not be met (and has no real meaning) without every employee's complete focus at all times on every task. Additionally, every employee is required to look out for their coworkers when their focus falters.
- 6) Incident investigations. Employees are required to immediately report all incidents in order to ensure a timely investigation. Incident investigation is aggressive at site

in order to capture lessons learned from minor incidents and correct controls before significant accidents occur.

E.1.b. Responsibilities

- 1) Responsibilities for Planning, Safety and Quality shall be specifically assigned and acknowledged. The primary means for accomplishing this is as follows:
 - a) Project Plans (e.g., Work Plan and HASP) are assigned to the Project Manager, Health and Safety Supervisor, QA/QC, Engineers, etc. and shall be signed by the individuals assigned responsibility for the document.
 - b) 1401.030 Task Plans and AHA(s) are assigned to and signed by the appropriate Superintendent (or other operations supervisor); health and safety officer; Engineer; QA/QC supervisor; and any other technical supervisors required for proper planning associated with the task. For example, tasks involving crane operations should have a lift supervisor assigned to the task plan.
 - c) Daily JTAs are assigned to every front line supervisor and shall be signed by the responsible supervisor and every member of the work team.
- 2) Supervisors, assisted by safety and health personnel are responsible for implementing effective accident prevention processes. This includes:
 - a) conducting required planning,
 - b) conducting required inspections,
 - c) aggressively investigating all incidents,
 - d) encouraging employee participation, and
 - e) taking a leadership role in achieving Incident-free performance.
- 3) Employees are responsible for:
 - a) following established procedures,
 - b) actively participating in training processes,
 - c) reporting all incidents immediately to their supervisors,
 - d) positively assisting in investigations of incidents, and
 - e) looking out for their coworkers (i.e., "buddies").

F. INDUSTRIAL HYGIENE PROGRAM CONTROLS

OSHA mandates programmatic controls for many hazards. This section describes the programs in place to control safety and health hazards on site.

F.1. Site Monitoring

Table F.1: Air Monitoring Requirements (1)				
Chemical Hazard	Instrument	Method ¹	Action level	ACTION (3)
Oxygen (O ₂)	Combustible Gas /O ₂ meter	Direct read area sample prior to confined space entry.	<19.5%, or >23.5%	<ul style="list-style-type: none"> ventilate until readings can be brought to 21% +/- 1% or do not enter. ventilate until readings can be brought to 21% +/- 1% or do not enter.
Combustible Gas /Vapors (CG)	Combustible Gas /O ₂ meter	Direct reading area sample prior to entering confined space	>10% LEL	clean, secure source of vapors, ventilate until readings can be brought to +/- 1% LEL or do not enter.
		<ul style="list-style-type: none"> Prior to hotwork near flammables Suspect gas leak 	Any detection above background drift or fluctuation	clean, secure source of vapors, ventilate until readings indicate source has been controlled.
			>50X PEL or TLV	Apply engineering controls Upgrade PPE as necessary (3).
			>1000 PPM or > IDLH	Stop work, determine source of hazard and apply an engineering control
Metals (Arsenic, Cadmium, Chromium, Lead)	Personal sampling pumps, MCE filter cassette in breathing zone of worker	NIOSH 7300 when suspected	>50% < 10x PEL or TLV	Apply engineering controls Upgrade PPE as necessary (3).
			>50X PEL or TLV	Apply engineering controls Upgrade PPE as necessary (3).
			>1000 PPM or > IDLH	Stop work, determine source of hazard and apply engineering control
Asbestos	Personal sampling pumps, MCE filter cassette in breathing zone of worker	NIOSH 7400 At least monthly while ACM is being handled on site.	>50% < 10x PEL or TLV	Apply engineering controls Upgrade PPE as necessary (3).
			>50X PEL or TLV	Apply engineering controls Upgrade PPE as necessary (3).
			>1000 PPM or > IDLH	Stop work, determine source of hazard and apply an engineering control
			>50X PEL or TLV	Apply engineering controls Upgrade PPE as necessary (3).
			>1000 PPM or > IDLH	Stop work, determine source of hazard and apply an engineering control

Table F.1: Air Monitoring Requirements (1)				
Chemical Hazard	Instrument	Method ¹	Action level	ACTION (3)
Comments or special instructions: 1. Methodology determines the analytical method used by the laboratory 2. Breathing zone is the location of the sampling media, it would be attached to the workers shoulder at approximately the same height of the workers nose and mouth. 3. For PPE upgrades refer to Table F.4 for respiratory protection selection guidelines and Table F.2.a for other PPE items.				

F.1.a. Sampling and Monitoring Strategy

- 1) Chronic exposure risks.
 - a) The site respiratory hazards pose primarily a chronic exposure risk.
 - b) Based on the site characterization data and risk assessment presented above, the anticipated respiratory hazards are not expected to exceed action levels for respiratory protection purposes.
- 2) Acute exposure risks.
 - a) Serious acute respiratory hazards are anticipated only in the event of confined space entries, and in those cases primarily an oxygen deficiency concern.
 - b) There may be a potential acute risk is hydrogen sulfide, sulfurous oxides, The site respiratory hazards pose primarily a chronic exposure risk.
 - c) Based on the site characterization data and risk assessment presented above, the anticipated respiratory hazards are not expected to exceed action levels for respiratory protection purposes.

F.1.b. Monitoring

- 1) All monitoring will be conducted in accordance with the equipment manufacturer's operating instructions.
- 2) Readings will generally be taken where indications exceed normal background and drift of the equipment.
- 3) Readings other than peak readings will generally be taken as sustained readings lasting for several seconds.

F.1.c. TWA Sampling

TWA sampling may include time weighted average sampling of personal exposures as well as specific areas (e.g., EZ boundaries, or worst case locations).

- 1) All TWA sampling will be conducted in accordance with NIOSH or OSHA standard methods for purposes of documenting exposure compliance. In some cases TWA sampling may be used for other purposes such as detecting exposure potential, but these samples shall not be documented as compliance samples.
- 2) Routine TWA sampling includes worst case breathing zone sampling. If three consecutive samples are below action levels no further testing is required unless/until conditions changes.
- 3) Where worst case samples indicate exposures above action levels, conduct area TWA sampling of EZ boundaries and discrete job tasks. Where three consecutive samples indicate exposures below the action levels no further testing is required unless/until there is a change in conditions.

F.1.d. Characterization and Confirmation

- 1) Characterize means:
 - a) Collect 3 worst case TWA personal exposure samples matched against 3 worst case TWA area exposure samples from the exclusion zone work areas.
 - i. These samples shall be taken at different times.
 - ii. Each sample shall reflect a full shift of activities and exposures.
 - iii. These samples shall be matched against applicable direct reading monitoring results.
 - iv. More samples may be taken to evaluate effectiveness of control modifications.
 - b) At such time as the three latest TWA samples indicate a consistent result the work process may be considered to be characterized if the site safety officer determines that there are no other indicates that these samples should not be considered representative. Consistent results include:
 - i. 3 consecutive samples below the action level;
 - ii. 3 consecutive samples at or below Level C half mask requirements;
 - iii. 3 consecutive samples at or below Level C Full face requirements; or
 - iv. 3 consecutive samples at or below Level B respiratory protection requirements.
 - c) Characterization must be repeated or confirmed whenever a change in conditions is identified. Indications of a change in condition include the following:
 - i. New materials are encountered that have been determined to contain significant changes in contaminant concentrations.
 - ii. Odors have changed significantly.
 - iii. Operational methods have changed in a way that could produce different exposures.

- iv. Direct reading instrument results are no longer consistent with the results taken during characterization.
 - For example the direct reading instrument results associated with a TWA characterization that was half of the action level are now getting close to doubling.
 - A confirmatory TWA sample should be taken to ensure that the current direct readings are still indicative of TWA exposures less than the action level.
 - A change in condition must be assumed and therefore controls must be upgraded (e.g., upgrade respiratory protection).
- d) For wipe samples characterization means to collect pre-activity collections to document PCB contamination levels prior to beginning any PCB disturbing work in the area or adjacent areas. Worst case surfaces are those known or highly suspected to have been in contact with contaminated materials, or, in the case of surfaces exposed to dusts, mist, or other contaminated aerosols; a horizontal surface that is unlikely to be disturbed by the activities going on at that location (e.g., the top of a door frame or locker).

F.2. Personal Protective Equipment

F.2.a. Summary of PPE Requirements

Table F.2.a: Summary of Standard PPE					
<i>Activity</i>	<i>Head/ Face</i>	<i>Foot</i>	<i>Hands</i>	<i>Respirator</i>	<i>Clothing</i>
General site labor, non-intrusive support zone tasks	<ul style="list-style-type: none"> • Hard hat(2), • safety glasses(2) 	Steel toed boots	Leather gloves as needed.	None. (1)	<ul style="list-style-type: none"> • Shirt w/sleeves • Long pants • high visibility vest (5)
Supervision of support zone work.	<ul style="list-style-type: none"> • Hard hat(2), • safety glasses(2) 	Steel toed boots		None. (1)	<ul style="list-style-type: none"> • Shirt w/sleeves • Long pants • high visibility vest (5)
Equipment decon.	<ul style="list-style-type: none"> • Hard hat(2), • safety glasses(2) • Face shields or goggles 	Steel toed PVC outer boots	Leather or PVC coated outer gloves	½ face respirator	<ul style="list-style-type: none"> • Tyveks or launderable coveralls (3) • high visibility vest (5)

Table F.2.a: Summary of Standard PPE

<i>Activity</i>	<i>Head/ Face</i>	<i>Foot</i>	<i>Hands</i>	<i>Respirator</i>	<i>Clothing</i>
Labor involved with Sinter Plant cleaning	<ul style="list-style-type: none"> • Hard hat • Safety glasses • (2) 	PVC outer boots w/steel toes, or Steel toed boots w/Boot covers (4)	Leather or PVC coated cotton as needed	Initial FF or ½ face PAPR	<ul style="list-style-type: none"> • Tyvek or launderable coveralls (3) • High vis vest(5) (optional)
ACM removal	<ul style="list-style-type: none"> • Hard hat • Safety glasses • (2) 	PVC outer boots w/steel toes, or Steel toed boots w/Boot covers (4)	Nitrile or Leather	(1) INITIAL FF OR ½ FACE PAPR	<ul style="list-style-type: none"> • Tyvek • High vis vest(5)
Sinter Plant Demolition with Equipment	<ul style="list-style-type: none"> • Hard hat • Safety glasses • (2) 	Steel toed boots	Leather Gloves	None (1)	<ul style="list-style-type: none"> • Shirt w/sleeves • Long pants • high visibility vest (5)
Laborers involved with Torchcutting Demo operations	<ul style="list-style-type: none"> • Hard hat • Safety glasses • (2) • face shield/tinted 	Steel toed boots with water resistant outer boot covers (6)(8)	Heavy Leather gloves or welding gloves	None (1) unless in confined area or determined by monitoring	<ul style="list-style-type: none"> • Appropriate leathers or fire resistant coveralls •
Drivers/Other operators once building designated "clean"	<ul style="list-style-type: none"> • Hard hat • Safety glasses (9) 	<ul style="list-style-type: none"> • Steel toed boots 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • long pants • shirts with sleeves • (9)

Table F.2.a: Summary of Standard PPE

<i>Activity</i>	<i>Head/ Face</i>	<i>Foot</i>	<i>Hands</i>	<i>Respirator</i>	<i>Clothing</i>
<p>(2) Refer to Table F.4 for initial respiratory protection requirement options. Voluntary use of respirators is authorized for nuisance dusts and exposures known to be below PEL levels. For nuisance dust use disposable N, R or P 95 or better (dispose of N or R types daily and P type weekly) For odors use half mask with OV or OV/P95 or better (change at start of week)</p> <p>(3) Hard hats and safety glasses are not required inside of enclosed cabs with windshields; or when working outside of the contaminated areas performing non-labor tasks such as walking to and from buildings/trailers, typing, or making notes.</p> <p>(4) Dust resistant outer coveralls such as Tyveks with modesty garments underneath. These are not allowed for use with hazardous materials. The safety officer may remove this requirement for tasks that involve minimal risk of contact with contaminants on personal clothing or skin,</p> <p>(5) Boot covers are any suitable covering capable of resisting dust penetration which would contaminate steel toed boots, and with durability appropriate for the task.</p> <p>(6) High visibility vests are for use in work areas within 25 feet of vehicular or equipment traffic. For heat stress considerations, an orange/high-visibility T-Shirt, or an orange/high-visibility hard hat may be substituted for the vest.</p> <p>(7) When working with wet contaminated materials, PVC or other equivalent water resistant outer boot covering will be used to prevent contamination of steel toed boots. Under conditions with launderable coveralls are penetrated by wet conditions they shall be similarly substituted or covered with a suitable outer water proof layer.</p> <p>(8) For purposes of preventing heat or cold stress, decon personnel may use water proof outer coverings with holes in the backs or aprons to allow for perspiration to escape (provided inner garments do not get wet as a result.</p> <p>(9) Wet work and decon may use a PVC steel-toed boot in place of a leather boot with cover.</p> <p>(10) Drivers entering contaminated areas shall be prepared to put on the applicable personal protective clothing worn in that area in the event of an emergency exit.</p>					

F.3. Contaminants of Concern

contaminant	OSHA PEL	ACGIH TLV	Exposure routes	acute symptoms	Chronic symptoms	Target organ	Spec. gravity
asbestos	0.1 f/cc	na	Inhalation ingestion contact	dyspnea, eye irritation	asbestosis, dyspnea, interstitial fibrosis, restricted pulmonary function, club finger, cancer	respiratory system, eyes	varies
cadmium	0.005 mg/m3	0.01 mg/m3	inhalation ingestion	dyspnea nausea,	muscle aches,	Lungs, kidneys,	8.65

contaminant	OSHA PEL	ACGIH TLV	Exposure routes	acute symptoms headache, tight chest, pulmonary edema Cancer,	Chronic symptoms vomiting, diarrhea	Target organ blood	Spec. gravity
Lead	0.05 Mg/m2	0.05 Mg/m3	Inhalation Ingestion Contact	Insomnia Facial pallor Low weight Constipation Anemia Colic Kidney disease Eye irritation		CNS, liver, kidneys, skin G.I. tract blood	11.34

F.4. Respiratory Protection Selection

Table F.4: Respirator Selection ⁽¹⁾						
Hazard	Levels		Respirator Type (2)	Cartridge Type	Cartridge Change Schedule	Notes
	lower	upper				
PNOC (nuisance dust)		5 mg/m3 total dust	DFP	P100 or P99 N100 or N99 R100 or R99	WEEK for P100 or P99 SHIFT for N100 or N99 R100 or R99	Optional ... Provide for voluntary use.
	5 mg/m3 total dust or 2.5 mg/m3 respirable	25 mg/m3 total dust or 12.5 mg/m3 respirable	HM APR	P100 or P99 N100 or N99 R100 or R99	WEEK for P100 or P99 SHIFT for N100 or N99 R100 or R99	
	25 mg/m3 total dust or 12.5 mg/m3 respirable	250 mg/m3 total dust or 125 mg/m3 respirable	FF APR	P100 or P99 N100 or N99 R100 or R99	SHIFT	

Table F.4: Respirator Selection ⁽¹⁾

Hazard	Levels		Respirator Type (2)	Cartridge Type	Cartridge Change Schedule	Notes
	lower	upper				
	250 mg/m3 total dust or 125 mg/m3 respirable		FF PP SA	Airline or SCBA	N/a	
	¼ PEL	5 x PEL	HM APR	N100 or R100	each SHIFT	(6)
	5 x PEL	50 x PEL	FF APR	P100/N100/R100	each SHIFT	(6)
asbestos	¼ PEL		AHA (3)(7)			(7)
Lead		30 ug/m3	DFP	P100 or P99; or N100 or N99; or R100 or R99	WEEK for P100 or P99 SHIFT for N100 or N99 R100 or R99	Optional ... Provide for voluntary use.
	30 ug/m3	250 ug/m3	HM APR or PAPR(FF)	N100; or R100; or P100	WEEK for P100 SHIFT for N100 R100	(6)
	250 ug/m3	2,000 ug/m3	FF APR or PAPR(FF)	N100; or R100; or P100	SHIFT	(6)
	2 mg/m3 or 2,000 ug/m3	25 mg/m3 25,000 ug/m3	FF PP SA	Airline or SCBA	N/a	(6)
	25 mg/m3		AHA (3)(7)			
	5 mg/m3		AHA (3)			

Abbreviations:

DFP = disposable filtering facepiece

FF = full face

HM = half mask

(H) = hood

APR = Air Purifying Respirator

PAPR(FF) = Powered Air Purifying Respirator with tight fitting full facepiece

PAPR(H) = Powered Air Purifying Respirator with loose fitting hood

AHA = requires a shift entry permit; or a job-specific hazard analysis

EE = Emergency Egress SCBA (escape only)

SA = supplied air (airlines or SCBA)

SCBA = self contained breathing apparatus

PP = positive pressure / pressure demand mode

EEO = emergency escape only

N100 R100 P100 = NIOSH approval types (for dust filtering cartridges)

OV = organic vapor

acid = acid gas

combo = combination cartridges

SHIFT = start each shift with a new cartridge (5)

WEEK = start each week with a new cartridge (5)

Table F.4: Respirator Selection ⁽¹⁾

Hazard	Levels		Respirator Type (2)	Cartridge Type	Cartridge Change Schedule	Notes
	lower	upper				
Notes:						
<p>(1) This table sets the initial respiratory protection selection options. The Project Health and Safety Manager, the Corporate Director of Health and Safety, or an Envirocon CIH may approve additions or changes to this table based on a written hazard analysis. An Envirocon CIH must approve respiratory protection downgrades.</p> <p>(2) This represents the minimum respiratory protection allowed. Respirators with a higher protection factor assigned by NIOSH may also be used.</p> <p>(3) Activity Hazard Analysis (AHA) must be approved by the Project Health and Safety Manager, the Corporate Director of Health and Safety, or an Envirocon CIH.</p> <p>(4) Ensure compliance with OSHA 29 CFR 1910.1028 benzene regulated areas, medical surveillance and training, etc.</p> <p>(5) Regardless of the change schedule, chemical cartridges should always be changed if warning properties are detected. Regardless of the change schedule, filter type respirators should always be change if breathing becomes difficult.</p> <p>(6) Ensure compliance with Subpart Z requirements for applicable heavy metals regulated areas.</p> <p>(7) Asbestos in excess of ½ the PEL requires a task specific AHA and compliance program approved by the Project Health and Safety Manager, the Corporate Director of Health and Safety, or an Envirocon CIH.</p>						

F.4.a. PPE Rules

- 1) Downgrading respiratory protection must be approved by an Envirocon CIH.
- 2) All personnel are required to use the personal protection specified for their work. This may include, but is not limited to cartridge respirator, protective suit, gloves, boots, hard hat, hearing protection, and safety glasses.
- 3) All respirator use to be done in accordance with Envirocon's Respiratory Protection Program and/or site-specific procedures. Refer to Section F.5 for the site-specific respiratory protection program and procedures.
- 4) Safety Boots/Shoes
 - a) Safety steel-toed boots/shoes that meet the requirements and specifications of ANSI Z41.1 shall be worn while working in field locations.
 - b) Boots/shoes must be in good repair and laced or fastened. Sandals and tennis-style shoes of any type shall not be worn while working.
- 5) Safety / Hard Hats

- a) Approved safety hats that meet requirements and specifications established in ANSI Z89.1 shall be worn at all times in the field or construction zone/yard removal locations.
 - b) Safety hats are not required to be worn in vehicles (passenger cars or trucks) or offices. Safety hats are not required in construction equipment with enclosed cabs. Safety hats must be worn in all construction equipment (loaders, bobcats, excavators, dump trucks, backhoes, etc.) that do not have enclosed cabs.
- 6) Eye Protection
- a) As a minimum, ANSI-approved safety glasses with side shields will be worn at all times when working on this site.
 - b) ANSI-approved safety glasses must be worn by equipment operators while in cabs unless eye hazards are adequately controlled by other methods listed in the most recent eye hazards analysis for this project.
 - c) Proper eye protection (goggles, safety glasses, etc.) must be worn when performing work with a recognized hazard to the eyes such as wire brushing, hammering, buffing, chipping, grinding, welding, cutting wire rope, working on rust, dirty chains, cables, or handling chemicals. **If the job might result in eye injury, then eye protection is required.**
 - d) Special goggles must be worn while helping or working within close range of welders.
 - e) Goggles or transparent full-face shields must always be worn when grinding.
 - f) Envirocon will not provide prescription safety glasses; Envirocon will provide safety glasses capable of fitting over prescription glasses.
- 7) Hearing Protection
- a) Approved earplugs or earmuffs must be worn in areas of high noise levels.
 - b) High noise level is defined as areas where noise levels exceed, or may exceed, 90 dBA.
- 8) Safety Vests
- a) Orange safety vests are required anytime Envirocon personnel are working around operating equipment.
 - b) This requirement applies to equipment operators whose duties involve them leaving the cab of their equipment and working in general area.
- 9) Clothing
- a) Sleeved shirts must be worn on the job.
 - b) Tank tops will not be allowed.
 - c) Long pants shall be worn. Pants shall cover the work boot top.

- d) Shorts will only be allowed if they are worn under cotton coveralls or other protective clothing.
 - e) Loose or ragged clothing shall not be worn.
- 10) All personnel are responsible to clean and maintain the protective equipment issued to them. Any noted defects in the equipment shall immediately be reported to the Envirocon Project Manager or the site superintendent, as appropriate.

F.5. Site-specific Respiratory Protection

F.5.a. Training

- 1) Envirocon Respiratory Protection Training Procedure
 - a) Employees may be trained using the Envirocon Respiratory Protection Program lesson plan.
- 2) 40 hr HAZWOPER Training. Employees may be trained in a recent 40 hour or Emergency Response training courses (within the last year), or a recent 8 hour refresher training course which covers the use of respiratory protection (within the last year).
- 3) Respirator wearers may also be trained by certified training using a lesson plan covering the new (1998) revised respiratory protection program standard.

F.5.b. Voluntary use of respirators

- 1) The voluntary use of respirators by employees (e.g., for control of odors or nuisance dusts) must be qualified.
- 2) Voluntary use of respirators is only allowed in areas characterized as not requiring respiratory protection.
- 3) The specific type of respirator and conditions of use must be approved by the Director of Health and Safety.
- 4) Voluntary use of respirators must otherwise be in accordance with this procedure.
- 5) Employees voluntarily using respirators must be trained in the information provided in Appendix D to Sec. 1910.134 "Information for Employees Using Respirators When Not Required Under the Standard."
- 6) Voluntary use of disposable nuisance dust masks does not require medical evaluation. Voluntary use of these masks does not require a fit test.

F.5.c. Medical qualifications.

- 1) Envirocon (PLHCP)
 - a) Respirator wearer's shall be medically evaluated by a company designated physician or other licensed health care professional (PLHCP).
 - b) Envirocon's PLHCP are Dr. Greaney and Dr. Whorton of GMG WorkCare.

- c) Dr. Greaney will be assisted in these duties by a local PLHCP. Local PLHCPs will also be licensed physicians. Fitness to wear respiratory protection will be determined by the local PLHCP and reviewed by Dr. Greaney.

F.5.d. Fit Testing

- 1) General requirements
 - a) Before an employee uses any respirator with a negative or positive pressure tight-fitting facepiece, the employee must be fit tested with the same make, model, style, and size of respirator that will be used.
 - b) Positive pressure (i.e., pressure-demand mode) supplied air respirators (SAR) or self contained breathing apparatus (SCBA) with tight-fitting facepieces are included in this requirement.
 - c) Unless noted otherwise, fit test shall be administered using an OSHA-accepted Quantitative (QNFT) protocol.
 - d) A QLFT may be used to fit test negative pressure air-purifying respirators that must achieve a fit factor of 100 or less (i.e., half mask air purifying respirators).
 - e) Fit testing of tight-fitting atmosphere-supplying respirators and tight-fitting powered air-purifying respirators shall be accomplished by QNFT or QLFT.
- 2) Tight-fitting atmosphere-supply & powered air-purifying respirators
 - a) Fit testing of tight-fitting atmosphere-supplying respirators and tight-fitting powered air-purifying respirators shall be accomplished by performing quantitative or qualitative fit testing in the negative pressure mode, regardless of the mode of operation (negative or positive pressure) that is used for respiratory protection.
 - b) Qualitative fit testing of these respirators shall be accomplished by temporarily converting the respirator user's actual facepiece into a negative pressure respirator with appropriate filters, or by using an identical negative pressure air-purifying respirator facepiece with the same sealing surfaces as a surrogate for the atmosphere-supplying or powered air-purifying respirator facepiece.
 - c) Quantitative fit testing of these respirators shall be accomplished by modifying the facepiece to allow sampling inside the facepiece in the breathing zone of the user, midway between the nose and mouth. This requirement shall be accomplished by installing a permanent sampling probe onto a surrogate facepiece, or by using a sampling adapter designed to temporarily provide a means of sampling air from inside the facepiece.
 - d) Any modifications to the respirator facepiece for fit testing shall be completely removed, and the facepiece restored to NIOSH-approved configuration, before that facepiece can be used in the workplace.
 - e) Voluntary use respirators

- i. Voluntary use of disposable paper masks for nuisance dusts does not require a fit test.
 - ii. Voluntary use of disposable paper masks for nuisance dusts does not require medical evaluation.
 - iii. Voluntary use of any other respiratory protection requires normal fit testing and medical evaluations.
- 3) Loose-fitting respirators
 - a) Loose-fitting respirators include respirators such as hood or helmet-type continuous flow (type C or CE) respirators.
 - b) Loose-fitting respirators do not require fit testing.
- 4) Envirocon fit testing will be done in accordance with the OSHA-accepted QLFT and QNFT protocols and procedures are contained in Appendix A of 29 CFR 1910.134.

F.5.e. Fit testing period.

- 1) Fit test results are good for a period of one year.
- 2) If an employee using a tight-fitting facepiece respirator will be assigned a different respirator facepiece (size, style, model or make) the fit testing must be repeated.
- 3) Fit test results are voided whenever the employee, a supervisor, a safety officer, the PLHCP, or program administrator makes visual observations of, changes in the employee's physical condition that could affect respirator fit. Such conditions include, but are not limited to:
 - a) facial scarring,
 - b) dental changes,
 - c) cosmetic surgery, or
 - d) an obvious change in body weight.

F.5.f. Use of respirators

- 1) Employees are not allowed to use respirators with tight-fitting facepieces with:
 - a) facial hair that comes between the sealing surface of the facepiece and the face or that interferes with valve function; or
 - b) any condition that interferes with the face-to-facepiece seal or valve function.
- 2) If an employee wears corrective glasses, Envirocon will obtain the appropriate spectacle kit and have it fitted with prescription lenses.
- 3) Employees are required to perform a fit check when donning all tight-fitting respirators.

F.5.g. General inspection and repairs

- 1) Inspection requirements

- a) All respirators used in routine situations shall be inspected before each use and during cleaning.
 - b) All respirators maintained for use in emergency situations shall be inspected at least monthly and in accordance with the manufacturer's recommendations, and shall be checked for proper function before and after each use.
 - c) Emergency escape-only respirators shall be inspected before being carried into the workplace for use.
 - d) Self-contained breathing apparatus (SCBA) shall be inspected monthly.
- 2) Repairs
- a) Respirators that fail an inspection or are otherwise found to be defective are removed from service, and are discarded or repaired or adjusted in accordance with these procedures:
 - b) Repairs or adjustments to respirators are to be made only by persons appropriately trained to perform such operations.
 - c) Repairs shall be made using only the respirator manufacturer's NIOSH-approved parts designed for the respirator.
 - d) Repairs shall be made according to the manufacturer's recommendations and specifications for the type and extent of repairs to be performed.
 - e) Reducing and admission valves, regulators, and alarms shall be adjusted or repaired only by the manufacturer or a technician trained by the manufacturer.
- 3) Employees shall inspect their respirator carefully and paying particular attention to:
- a) exhalation valve(s),
 - b) inhalation valve(s),
 - c) tightness of components,
 - d) elasticity of components,
 - e) look for missing components,
 - f) look for cracked components,
 - g) look for missing cartridge gaskets;
 - h) look for damage to cartridges (in particular the seat that seals with the cartridge gasket); and
 - i) ensure that all filters, cartridges and canisters used are labeled and color coded with the NIOSH approval label and that the label is not removed and remains legible.
- 4) For supplied air systems also inspect for:
- a) proper functioning of regulators;
 - b) final regulator pressures not exceeding 125 psi;

- c) air lines (low pressure) not exceeding 300 feet in length; and
- d) grade D certification of breathing air.

F.5.h. Respirator cartridges changes

- 1) Respirator cartridges shall be changed
 - a) in accordance with manufacturer's recommendations, and
 - b) as prescribed by this HASP or Activity Hazard Analysis (AHA).
- 2) Cartridges shall also be changed:
 - a) If the wearer detects vapor or gas breakthrough;
 - b) if the wearer detects changes in breathing resistance; or
 - c) if the wearer detects leakage of the facepiece.

F.5.i. Cleaning and disinfecting

- 1) Cleaning
 - a) Whenever respirators are doffed, employees shall wash their faces and respirator facepieces in order to prevent eye or skin irritation.
 - b) Cleaning shall be accomplished by using soap and water or equivalent cleaning solutions.
- 2) Disinfecting requirements
 - a) Respirators issued to more than one employee shall be cleaned and disinfected before being worn by different individuals.
 - b) Respirators maintained for emergency use shall be cleaned and disinfected after each use.
 - c) Respirators used in fit testing and training shall be cleaned and disinfected after each use.
 - d) Respirators used by a single individual shall be disinfected at least weekly.
- 3) Disinfecting procedures
 - a) Respirator components should be immersed for two minutes in one of the following:
 - i. disinfecting agent recommended for respirator sanitizing; or
 - ii. hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter of laundry bleach to one liter of water at 43 deg. C (110 deg. F); or
 - iii. aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 cc of 45% alcohol) to one liter of water at 43 deg. C (110 deg. F).

- b) Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F] maximum), preferably running water.
- c) Drain (The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on facepieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.)
- d) Use a mild solution of baking soda to remove chlorine or disinfectant residues.
- e) Components should be hand-dried with a clean lint-free cloth or air-dried.
- f) Reassemble facepiece, replacing filters, cartridges, and canisters where necessary.
- g) Test and inspect the respirator to ensure that all components work properly.

F.5.j. Storage

- 1) All respirators shall be stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals.
- 2) All respirators shall be packed or stored to prevent deformation of the facepiece and exhalation valve.
- 3) Emergency respirators shall be:
 - a) kept accessible to the work area;
 - b) stored in compartments or in covers that are clearly marked as containing emergency respirators; and
 - c) stored in accordance with any applicable manufacturer instructions.

F.6. Heat Stress

The site heat stress program shall be enforced prior during periods when the ambient temperature of 65 °F. Training shall be accomplished prior to implementation.

F.6.a. Training

All site personnel shall be trained in the hazards and controls of heat stress prior to the onset of hot weather.

F.6.b. Acclimatization

Personnel become acclimatized in about 7 to 10 days (and loose acclimatization in about the same period of time). Extra attention should be given during transitional weather and to new employees that are not used to heat stressful conditions.

F.6.c. Fluids

Workers shall be encouraged to increase consumption of water. Cool or cold water shall be used to enhance palatability and consumption. Electrolyte-containing beverages may also be used to encourage consumption.

F.6.d. Shelter

Shelter from radiant heat (i.e., shade) shall be available for ground laborers exposed to direct sunlight (i.e., radiant heat loading) during conditions of heat stress. Shelter does not necessarily require air conditioning, and air conditioning may actually be uncomfortable for employees working in heat stressful conditions.

F.6.e. Clothing

Clean dry undergarments help prevent some heat stress related problems. Provisions should be made for changing PPE garments that may become sweaty and dirty. Showering also helps to rehab personnel that show signs of high stress. Every effort should be made to minimize PPE requirements which may increase the heat stress of personnel without a commensurate gain in personal protection.

F.6.f. Monitoring

- 1) One of the most important aspects of monitoring for heat stress is the buddy system. Employees, through their training must be sensitive to early warning signs. Self/buddy checks of pulse are a simple method of extending this principle.
- 2) At the discretion of the Site Safety Officer one of two monitoring programs may be employed during program implementation. A program of personal stress monitoring is appropriate for personnel wearing PPE (e.g., level C workers) and for most other situations. A program of WBGT & work/rest regimen is appropriate for personnel not wearing chemical resistant PPE which fully encloses the body and prevents evaporative cooling of skin surfaces (e.g., level D workers and workers using certain modified level D or C ensembles). Employees that must be monitored in either program shall include at a minimum:
 - a) exposed personnel (e.g., those not working in air conditioned spaces) conducting ground labor tasks in any ensembles;
 - b) exposed personnel (e.g., those not working in air conditioned spaces) wearing whole body, chemical protective clothing PPE; and
 - c) any additional personnel considered to be at particular risk by the SSO or PHSM.

F.6.g. Area Monitoring and Work Rest Regimens

- 1) WBGT Area Monitoring
 - a) The use of WBGT (wet bulb globe temperature) area monitoring may be used in conjunction with an established work/rest regimen. WBGT monitoring and the work/rest regimen shall be in accordance with the latest edition of the American Conference of Governmental Industrial Hygienists' (ACGIH) "Threshold Limit Values for Chemical Substances and Physical Agents" also referred to as the "TLV booklet."
 - b) In general, this procedure should only be applied to personnel in breathable work clothing with PPE which allows for evaporative cooling (e.g., level D workers or modified level D workers where PPE does not prevent evaporative

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cooling of the skin). If this monitoring program is used for personnel in PPE, the ACGIH TLV booklet correction factors for clothing shall be used.

2) Work Rest Regimen

- a) The TLVs specified on Table 1 refer to heat stress conditions under which it is believed that nearly all heat acclimatized, adequately hydrated, unmedicated, healthy workers wearing light-weight summer clothing may be repeatedly exposed without adverse health effects. The work areas are assumed to have at least some air movement.

F.7. Cold Stress

To minimize cold related illnesses, site supervisors are to be aware of the symptoms and environmental conditions that lead to cold-related illnesses. Appropriate steps shall be taken to take to prevent their occurrence of these illnesses. This procedure describes the causes, symptoms, treatment and/or prevention of cold-related illness.

F.7.a. Thermal Balance.

When the temperature of the surrounding air or water are cooler than the worker, the body's physical processes must increase to maintain thermal balance.

Shivering is the body's attempt to generate increased heat.

F.7.b. Cold Stress Symptoms.

- 1) Common (but unreliable) symptoms
 - a) Shivering, pain, and numbness, although commonly associated with cold stress, **are not trustworthy indicators** to cold exposures!
 - b) The reason you should not trust these is because prolonged cold exposure numbs all body sensations.
 - c) If these symptoms are detected, cold stress should be suspected.
 - d) The lack of these symptoms **DOES NOT rule out** the possibility of cold stress.
- 2) Wind-chill temperature is a better means of evaluation as it takes into account the wind's ability to strip heat from the body through convection.
- 3) Water conducts heat away from the body much faster than air. Personnel are especially exposed to a cold stress hazard when performing spill clean-up in boats or around open water in cold weather situations. Falling into cold water can rob body heat very quickly.
- 4) Clothing that is wet with perspiration (as well as from water contact) will cause heat loss through conduction.

F.7.c. Cold Injury

- 1) Trench Foot.

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- a) Cause: Occurs as a result of extended exposure of the feet to cold and moisture.
 - b) Injury: Capillary walls of the feet are injured, resulting in tingling, itching and pain.
 - c) Recognition: Blisters may form followed by ulceration of the skin.
- 2) Frost-Nip.
- a) Cause: Is a localized superficial freezing of extremities such as ears, nose, toes, and fingers.
 - b) Injury: Worker experiencing frost nip are susceptible to future injury and should avoid chilling.
 - c) Recognition: Initially there is a dark bluish color due to bleeding under the skin which at times can become gangrenous.
- 3) Frostbite.
- a) Cause: Frostbite occurs when the moisture in the skin actually freezes, forming ice crystals, resulting in the damage of skin cells. The ears, nose, toes and fingers are most susceptible because of poorer circulation in these areas. The body may shut down flow to the extremities in order to maintain warmth in body core areas.
 - b) Injury: Tissues are destroyed when bodily fluids turn to ice. Damaged area can become gangrenous resulting in the loss of tissue, finger tips and toes.
 - c) Recognition:
 - i. A burning pain is noted initially, then pain decreases and numbness sets in.
 - ii. The injured area becomes red, then blue/red.
 - iii. The skin becomes waxy pale in appearance because of lack of oxygen.
- 4) Hypothermia.
- a) Cause: Occurs when heat production of the body is not sufficient to replace heat lost to the environment.
 - b) Injury: The core body temperature is lowered and the pulse rate slows. Metabolic processes in the body are finely tuned to perform at normal body temperature. As the temperature is lowered, muscular weakness occurs, mental abilities dull and the worker becomes uncoordinated. Cardiac arrest follows if core temperature continues to fall.
 - c) Recognition:
 - i. Signs of hypothermia are evident at 95° F body core temperature.
 - ii. Consciousness is lost between 89.6 - 86.0° F.

- iii. At lower core temperatures, cardiac arrest is possible.
- iv. Exposure to cold water decreases the body core temperature rapidly and consciousness is quickly lost.
- v. Workers on or over water should be acutely aware of the danger of immersion during cold weather.
- vi. Hypothermia results in dulling of senses and could result in poor decision making.

F.7.d. Prevention

- 1) Training and recognition.
 - a) Prevention of cold stress is, in many ways, similar to preventing heat stress. Training and recognition of the hazard is especially important.
 - b) All personnel will receive training on the cause, symptoms, and most importantly, methods of prevention of cold stress injuries.
- 2) Clothing.
 - a) Prevention of hypothermia and other cold injuries is best accomplished by protecting workers from cold and moisture.
 - b) Clothing is the most important factor in prevention of injury.
 - c) Personnel working on land should layer clothing with outer layer being wind and water resistant.
 - d) The layers should be capable of being vented at wrist, neck and waist to reduce wetting by perspiration.
 - e) Protect extremities that have poor circulation.
 - f) Keep head and face covered.
 - g) Wear insulated foot wear, keep socks dry (bring extra socks as needed).
 - h) Gloves are extremely important.
 - i) Never allow bare skin to contact metal surfaces at sub-zero temperatures.
- 3) Acclimatization.
 - a) Do not count on acclimatization.
 - b) A limited degree of acclimatization can occur from exposure and working in cold environments.
 - c) Some physiological changes do occur but people also learn how to more effectively protect themselves from temperature extremes.
- 4) Fluid Replacement.
 - a) As with heat stress, blood circulation and heat transfer is critical to dealing with cold temperature extremes.

- b) Cold weather causes significant water loss as a result of the dryness of the air.
- c) Fluid intake should be increased to prevent dehydration which directly affects blood volumes and flow to the extremities.
- d) Warm, sweet, caffeine-free, nonalcoholic drinks and soup offer the best fluid replacement and provide caloric energy.
- 5) Work-Rest Regimens.
 - a) When temperatures are less than 20° F (actual or wind-chill) heated warming shelters should be made available.
 - b) Workers should use these on regular basis. See Table I at the end of this procedure for guidelines for scheduling breaks.
- 6) Diet.
 - a) As with any work in extreme temperatures, personnel will be instructed to eat a well-balanced diet to replace calories burned and provide necessary vitamins and nutrients.
- 7) Environmental Monitoring.
 - a) Regular monitoring of the environment by recording wind speed and actual thermometer readings for comparison to the wind-chill chart should occur at regular intervals depending on conditions. See Table I at the end of this procedure for wind chill equivalents.
- 8) Prohibited Activities.
 - a) Alcohol should not be consumed since it increases blood circulation to the skin and interferes with internal thermostatic control. Alcohol also interferes with mental acuity which can lead to risk taking.
 - b) Cigarette smoking should be prohibited since the nicotine restricts flow of blood to the extremities.
- 9) ACGIH TLV Guidelines:
 - a) The current edition of the American Council of Governmental Industrial Hygienists' Threshold Limit Values (TLV) provides a reference on cold stress prevention.
 - b) Some of the TLV information is summarized in the following Table I.

F.8. Hazard Communication Program

The Envirocon Program, in its entirety, is located in a separate labeled notebook in the Envirocon Project Trailer. The notebook is available for review by employees at any time during normal work shift. Envirocon will be responsible for maintaining a copy of their Hazardous Communication Program and MSDSs on site.

F.8.a. Subcontractors

Subcontractors will be responsible for keeping an individual copy of their respective programs.

F.8.b. Material Safety Data Sheets (MSDSs)

MSDSs will be located in a separate labeled notebook in the Envirocon Project Trailer. MSDSs will be available to all employees for review during the work shift. Copies of all MSDSs for materials on site will be provided to Bureau of Reclamation prior to material delivery on the site.

F.8.c. Container labeling

All containers received on site will be inspected to ensure the following:

- 1) All containers clearly labeled;
- 2) Appropriate hazard warning; and
- 3) Name and address of the manufacturer.

F.8.d. Employee Training and Information

Prior to starting work, each employee will attend a health and safety orientation and will receive information and training on the following: An overview of the requirements contained in the Hazardous Communication Program. This training shall include at a minimum the following:

- 1) Hazardous chemicals brought to the site for the project;
- 2) The location and availability of the written Hazardous Communication Program;
- 3) Physical and health effects of the hazardous chemicals;
- 4) Methods of preventing or eliminating exposure;
- 5) Emergency procedures to follow if exposed;
- 6) How to read labels and review MSDSs to obtain information; and
- 7) Location of MSDS file and location of hazardous chemical list.

G. SITE SAFETY PROCEDURES

This section addresses safe work practices and site-specific safety procedures that will be used to control hazards on site.

G.1. Code of Safe Work Practices

Every employee has a responsibility to ensure that the program proceeds efficiently and safely. The following procedures constitute the basic safe work practices expected of every employee.

G.1.a. Conducting Yourself in a Responsible Manner

Safety programs are not only for your safety, but the safety of everyone on site. Your conduct potentially impacts your coworkers.

- 1) Perform all tasks in a safe and approved manner.
- 2) Do not direct an air hose at another person. Do not use compressed air to remove debris from clothes, hair, or any part of the body.
- 3) Honor the barricades erected by other contractors on the job site.
- 4) Do not stand in front of a door that opens toward you.
- 5) Do not work while your ability or alertness is so impaired by fatigue, illness, or other causes that they might unnecessarily expose yourself or others to injury.
- 6) Do not bring, keep, or use alcoholic beverages, controlled substances, or weapons on site.
- 7) Anyone known to be under the influence of drugs or intoxicating substance, which impair the employees ability to safely perform the assigned duties, shall not be allowed on the job while in that condition.
- 8) Workers shall not handle or tamper with any electric equipment in a manner not within the scope of their duties, unless they have received instructions from a qualified, licensed electrician.
- 9) Do not use any form of solvent, gasoline or kerosene for cleaning hands or clothing. Use soap and water or other cleansers intended for the purpose.
- 10) Keep hands and other part of your body out of pinch points, for example:
 - DO NOT use your hands to dislodge rocks or jams in tailgates (instead raise and lower the bed to use the gate's weight to clear materials and jams);
 - DO NOT get between counterweights on excavators or cranes and tracks, walls, excavation cuts etc.; and
 - DO NOT reach into belts with running machinery.
- 11) Use handrails when climbing or descending stairs and walkways.
- 12) Do not run, except as necessary in an emergency.

- 13) Horseplay, scuffling, and other acts which tend to have an adverse influence on the safety or the well being of other employees is prohibited.
- 14) Do not jump from one level to another or one place to another, for example:
 - Get on and off equipment using three points of contact,
 - walk down stairs without jumping or skipping steps,
 - use ladders or ramps provided to descend into trenches;
 - do not jump out of pickup beds; and
 - do not jump across trenches.
- 15) Always stand on an approved ladder to remove articles that may out of reach from floor level. Do not stand on chairs, boxes, or other makeshift devices.
- 16) Loose or frayed clothing, loose or hanging long hair, dangling ties, finger rings, etc., shall not be worn around moving machinery or other areas where they may become entangled
- 17) Get help lifting heavy objects from heavy equipment, lifting devices, or help from another employee, and do not lift objects greater than 50 lbs unaided.
- 18) Do not improperly use, mishandle, or tamper with health and safety equipment and sampling devices.
- 19) Personnel shall not drop or throw any articles or materials of any kind unless a specific procedure has been developed to do so safely.
- 20) Do not harass, feed, or photograph wildlife. If you find an injured or dead animal, contact the nearest gate attendant or the U.S. Fish and Wildlife Service.

G.1.b. Participate in Your Safety Programs

There are a number of ways for you to influence the safety on site. Don't just complain about problems, participate in your own safety.

- 1) Attend each day's work briefing as scheduled.
- 2) Attend all required safety meetings, training, or briefings.
- 3) Complete safety observer reports when you want to make a suggestion, observe a commendable act of safety or quality, take a "time out for safety" to correct an unsafe act or condition.
- 4) Approach every task with incident-free performance in mind!
- 5) Ask questions when you are uncertain about a procedure or equipment use.
- 6) Participate in the evaluation or investigation of any accident or incident when you are requested to do so.
- 7) If you fear reprisal use the Envirocon safety Hotline **800-224-7389**.

G.1.c. Practice Good Housekeeping

Housekeeping is the hallmark of

- 1) Keep your work area clean and orderly.
- 2) Good housekeeping practices shall be maintained continually.
- 3) Keep work, storage, and access areas clean of tools, equipment, and debris.
- 4) All means of egress shall be kept unblocked, kept clear of debris and slip or trip hazards, kept well lighted, and kept unlocked at times.
- 5) Immediately remove spilled liquids from the floor.
- 6) Clean up or otherwise remove slip/trip/fall hazards immediately.
- 7) Do not leave boards with protruding nails or other loose material on the floor where they may be stepped on.
- 8) Keep aisles and walkways clear of electrical and telephone cords.
- 9) Do not overload electrical outlets.
- 10) Electric cords shall not be exposed to potential damage from vehicles.
- 11) Mark or barricade slip/trip/fall hazards that can not be removed.
- 12) Any time work is performed overhead, barricades shall be erected.
- 13) Barricades shall consist of caution (yellow) or danger (red) barricade colors and appropriately worded tape or signs.
- 14) All barricades shall be removed when not in use.

G.1.d. Follow Standard Procedures

Hazardous waste operations involve a number of standard procedures which are particularly important. Make these procedures a habit.

- 1) Use the Buddy System when performing operations in hazardous areas; when working with hazardous contaminants; when physical capabilities may become stressed (heat stress); or working in proximity of operating machinery or equipment.
- 2) Practice contamination-avoidance techniques.
- 3) Enter and exit the Exclusion Zone (EZ) and the Contamination Reduction Zone (CRZ) through designated areas.
- 4) Complete sign-in/out logs when required.
- 5) Do not eat, drink, chew tobacco or gum, smoke, or engage in any other activity that may increase the possibility of hand-to mouth contact in the EZ or the CRZ. (Exceptions may be permitted by the Project Health and Safety Manager (PHSM) for other reasons, such as to allow fluid intake during heat stress conditions.)
- 6) Do not use lighters or matches in the EZ and CRZ.

- 7) Employees under a physician's care and/or taking prescribed narcotics must notify the designated site safety supervisor.
- 8) Lift material in a safe manner and avoid strains. Bend your knees, keep your back straight, and push upwards with your legs when lifting. The lifting of heavy and bulky objects will normally be done by or more shop personnel. Lifting heavy/bulky objects improperly can result in needless injury.
- 9) Get help (mechanical help or more people) when lifting heavy or awkward materials.
- 10) Wear the personal protective equipment (PPE) specified in the site HASP, including hard hats, steel toed boots, and safety glasses that must be worn at all times in active work areas.
- 11) If you are required to wear a respirator, remove facial hair (beards, long sideburns, or mustaches) that may interfere with the satisfactory fit of the respirator mask.
- 12) Use safety devices provided for your protection (e.g., handrails, guards, pressure relief valves, and seat belts). Do not remove these devices while the equipment is being operated.
- 13) Never approach within 25 feet of the operating area of a piece of equipment without first making eye contact with the operator, signaling your intention, and receiving an acknowledgement from the operator. If you wish to approach the equipment (e.g., to speak with the operator) the operator must first lower all buckets, blades, etc. and idle the engine before you approach.
- 14) When ground personnel support heavy equipment, pay particular attention to pinch points (e.g., the counterweight swing radius and the tracks of an excavator). Keep out from under suspended loads.

G.1.e. Follow Safety Procedures

In addition to standard procedures, there will be many site specific procedures to learn and follow. You need to learn these from your site-specific training and follow the procedures. If you feel the procedures are incorrect or inadequate it is improper to take it upon yourself to modify procedures. Ask your supervisor, make suggestions, or raise questions during planning and training.

- 1) Attend, pay attention, and ask questions during procedure training and briefings.
- 2) Implement, adhere to, and follow established rules, guidelines, procedures, plans, etc., as specified.
- 3) Follow proper decontamination procedures.
- 4) Make sure fall protection or fall arrest systems are in place when working at elevations greater than 6 feet above the surrounding work area.
- 5) Follow the work-rest regimens and other practices required by the heat stress program.
- 6) Where appropriate, lockout procedures shall be used.

- 7) Employees shall not work under vehicles supported by jacks or chain hoists without protective blocking that will prevent injury if jacks or hoists should fail.
- 8) Obey all authorized safety signs and demarcations. Do not place or remove these items except as authorized by the Site Health and Safety Supervisor (HSS).
- 9) Become familiar with the on-site hazards, work zones, PPE requirements, and decontamination methods.

G.1.f. Permit Required Procedures

Many of the most important procedures dealing with the most dangerous hazards involve permit requirements to ensure that necessary precautions are taken before work begins. Pay particular attention to these procedures.

- 1) Do not enter a permit-required Confined Space without a permit, and follow all requirements of permits as issued.
- 2) Don't rely on postings to warn you of confined space hazards. When in doubt ask for a permit and testing. Manholes, underground vaults, chambers, certain confining excavations, tanks, silos or other similar spaces may have a confined space hazard.
- 3) Check with your Supervisor prior to starting any Hot Work operation (welding or cutting operations) and, if you are working in an area that requires a Hot Work Permit, follow the permit as issued.
- 4) Depending on the fire hazards at your facility, hot work permits may be required for use of cigarette lighters, electrical equipment that is not intrinsically safe, flash photography, motors, engines, or spark producing metal tools.
- 5) The combination of hot work and confined spaces is particularly dangerous even if you don't plan to enter the space! No burning, welding, or other source of ignition shall be applied to, or near any enclosed tank or vessel, even if there are some openings, until it has first been determined that no possibility of explosion exists and authority for the work is obtained from the foreman or superintendent. **This includes small voids too!** A sealed can, doubler space, storage compartments or similar small spaces can contain flammable debris or explosive vapors.

G.1.g. Use Tools Properly

Tools, especially hand tools, are used frequently with minimal supervision. It can be all too easy to use tools improperly and create serious safety hazards.

- 1) Use all tools in the manner intended and/or prescribed. The operating instructions for all tools and equipment **ARE MANDATORY**.
- 2) Modification of use or design must be in accordance with the written instructions or permission of the manufacturer.
- 3) Do not suspend tools or any other items using electrical cords.
- 4) In locations where the use of a portable power tool is difficult, the tool shall be supported by means of a rope or similar support of adequate strength.

- 5) Air hoses shall not be disconnected at compressors until the hose line has been bled.
- 6) Inspect safety devices before every use including but not limited to:
 - a) respirators,
 - b) personal protective equipment,
 - c) body harnesses,
 - d) lanyards,
 - e) monitors,
 - f) fire extinguishers,
 - g) confined space retrieval systems (not the same as fall protection harnesses), and
 - h) manbaskets.
- 7) Inspect other tools and equipment before use.
 - a) A competent person must inspect scaffolds and manlifts before each day's use.
 - b) Ladders must be in good service, placed at the proper angle, secured, and extend to the proper length (for access to heights the ladder must be 3 feet above the landing).
 - c) Inspect power tools, looking especially for damaged insulation or missing ground plugs on electrical cords.
 - d) Inspect cutting devices looking especially for properly sharpened and guarded edges.
 - e) Inspect hand tools look especially for chisels, hammers and punches with mushroomed heads; files without handles, and hammers with broken handles.
- 8) Do not use defective equipment.
 - a) Don't leave defective equipment in service for others to use. Remove it from service and report the problem to your supervisor.
 - b) At a minimum, defective equipment must be tagged out of service.
 - i. Use a red tag placed near starting switches or levers.
 - ii. Describe the reason the equipment is tagged out.
 - iii. Write your name and the date on the tag.
 - c) Alternatively, defective equipment can be taken out of service by destruction and disposal.
- 9) Use ground fault circuit interrupters (GFCI) for cord and plug equipment used outdoors, in damp locations, or when equipment is not plugged directly into permanent wiring.

- 10) Use only extension cords rated for hard service or junior hard service (e.g., SO, JSO, SOW, JSOW). A UL label on a local hardware store flat cord is probably **NOT** rated for this service!
- 11) Keep electrical cords out of walkways and accumulations of water unless protected and rated for such service.

G.1.h. Operate Equipment Safely

- 1) All equipment is to be operated in accordance with manufacture's written instructions and/or manuals.
- 2) Equipment shall not be modified or operated out of specified limits without written permission from the manufacturer and the health and safety manager for the project.
- 3) Only trained and authorized persons shall operate machinery or equipment.
- 4) Do not operate equipment unless you are properly trained and authorized to do so in a manner consistent with the owner/operators manual.
- 5) DO NOT use a piece of equipment, which has been tagged out of service! Do not remove red tags without authorization from the person placing the tag or the person responsible for the repairs.
- 6) Inspect equipment before using it.
 - a) Heavy equipment inspections shall be documented. Note all discrepancies and tag out equipment that may be dangerous to operate.
 - b) Red tags must have a description of the reason for the tag, the name of the person placing the tag, and the date the tag was applied.
- 7) Machinery shall not be serviced, repaired, or adjusted while in operation, nor shall oiling of moving parts be attempted, except on equipment that is designed or fitted with safeguards to protect the person performing the work.
- 8) Use vehicle or equipment seat belts any time the vehicle or equipment is in motion.
- 9) Excavating equipment shall not be operated near tops of 'cuts, banks, or cliffs if employees are working below.
- 10) Do not maneuver equipment into the working area of other equipment without first making eye contact with the operator working in the area and signaling your intentions to maneuver into that area.
- 11) Always acknowledge that you understand that other equipment or ground personnel may enter your working area.
- 12) Do not allow people on foot to approach without lowering hydraulically lifted or suspended components (e.g., buckets, blades, bellies) and reducing engine speed to idle.
- 13) Tractors, bulldozers, scrapers, and carryalls shall not operate where there is a possibility of overturning in dangerous areas such as the edges of deep fills, cut banks, and steep slopes.

- 14) Do not allow supporting ground personnel to work within pinch points of the equipment (e.g., the swing radius of a counterweight and the tracks on an excavator) or under suspended loads.

G.2. Falling and tripping hazards

G.2.a. Falls--Housekeeping and materials storage

- 1) All material shall be stored in a manner that will ensure that the material is safe from unexpected movement, falling, rolling, blowing, or any other uncontrolled motion.
- 2) Materials and supplies shall be kept away from edges of floors, stairways and access/egress routes (36 inches minimum).
- 3) Forms and scrap lumber with protruding nails and all other debris shall be cleared from work areas, passageways, stairs, and in and around buildings or other structures.
- 4) Tripping hazards, protruding nails, oil slicks, scrap materials and other hazardous conditions occurring during the course of the job shall be eliminated as work progresses.
- 5) Tools and equipment shall not be strewn about where they might cause tripping or falling hazards and shall, at the end of each workday, be collected and stored or disposed of as appropriate.
- 6) All food waste and oily/greasy rag containers shall be equipped with tight closing lids.
- 7) Protruding reinforcing steel (rebar) shall be properly capped or otherwise protected to prevent a hazardous condition.
- 8) All non-hazardous trash, oily wastes, PPE, debris and trash of any kind shall be segregated according to the applicable waste segregation scheme; and shall be labeled accordingly.
- 9) Covers on all roll-offs, drums, and containers of any type shall be securely covered at the end of the day.

G.2.b. Falls--slippery surfaces, unstable surfaces, uneven terrain

- 1) Wet conditions on the site caused by rain and/or work activities are likely to be encountered during the project.
- 2) Employees will be informed of the hazards associated with walking on slippery and or uneven surfaces.
- 3) Mark or remove trip hazards.
- 4) Proper foot wear will be provided to all employees involved with work activities during these conditions.
- 5) When possible, pedestrian traffic will be redirected around potentially dangerous areas.

- 6) Everyone should keep the work area and other areas where people may walk clean and orderly.
- 7) Tools, debris, and other objects should not be left on the floor, decking, or other areas where they present hazards during a job or after a job is completed.
- 8) Oil spills and slippery spots shall be cleaned up immediately.
- 9) Extra precautions should be taken when walking on steel decking during wet/icy weather and/or oily conditions.
- 10) Never walk on piping, never take dangerous shortcuts, and avoid jumping from elevated places.

G.2.c. Falls--Ladders

- 1) Personnel must visually inspect each ladder for defects before use, defective ladders shall not be used.
- 2) When working from a ladder, wear fall protection if work requires your body to extend past the margins of the ladder sides.
- 3) While ascending or descending a ladder, carry nothing which will prevent holding onto the ladder with both hands.
- 4) Metal ladders will not be used if there are any existing or potential electrical hazards in the work area.
- 5) All ladders must be securely tied off or secured by an attendant while the ladder is in use.
- 6) When working from ladders, work facing the ladder with both feet on the rungs.
- 7) Workers shall not stand with their waist above the top step of a ladder without wearing a safety belt that is securely tied off to a local structure.
- 8) Short ladders shall not be spliced together to make a longer ladder.
- 9) The base of the ladder must be set back a safe distance from the vertical; approximately one-fourth the working length of the ladder.

G.2.d. Falls--Fall Protection working from elevated surfaces

Duties involving heights greater than 6 feet above the ground include:

- 1) Utilize fall protection or restraint system as described in the Envirocon Fall Protection Program.
- 2) Append a task specific AHA to this plan to specify type and design of fall protection system on a case by case basis.
- 3) The open edges of all floors 6 feet or more above the next floor or level shall be guarded by an approved barricade secured to prevent accidental displacement.

G.2.e. Illumination

Table D-65.1 of 29 CFR 1926.65: Illumination of Work Areas	
Foot Candles	Area of Operations
5	General Site Areas
3	Excavation and waste areas, accessways, active storage areas, loading platforms, refueling, and field maintenance areas.
5	Indoors: Warehouses, corridors, hallways, and exitways.
5	Tunnels, shafts, and general underground work areas. (Exception: minimum of 10 foot-candles is required at tunnel and shaft heading during drilling, mucking, and scaling. Mine Safety and Health Administration approved cap lights shall be acceptable for use in the tunnel heading.
10	General shops (e.g., mechanical and electrical equipment rooms, active storerooms, barracks or living quarters, locker or dressing rooms, dining areas, and indoor toilets and workrooms.
30	First aid stations, infirmaries, and offices.

Light plants or other sources of light shall be used as necessary to maintain the requirements described in Table D-65.1 of 29 CFR 1926.65.

G.3. Fire Prevention

G.3.a. Use of Gasoline In Vehicles and Small Containers

The use of gasoline is very common on and off the job. The familiarity of its use may lead to complacency regarding the properties of this highly dangerous fuel. Thousands of people are treated each year for burn injuries related to the misuse of gasoline. It is important to remember that gasoline has only ONE proper use - to power vehicles or machinery. Remember that gasoline is highly volatile! Just one gallon of gasoline is equivalent to 14 sticks of dynamite in explosive force.

Vapors from gasoline are also dangerous! Gasoline vapors are heavier than air; they flow invisibly along the ground and can ignite from a flame, spark, hot surface or static electricity causing a shattering explosion.

- 1) Before Refueling
 - a) Turn off your vehicle engine while refueling.
 - b) Put your vehicle in park and/or set the emergency brake.
 - c) Disable or turn off any auxiliary sources of ignition such as a camper or trailer heater, cooking units, or pilot lights.
- 2) Ignition Sources
 - a) Do not smoke, light matches or lighters while refueling at the pump or when using gasoline anywhere else.
 - b) Turn off your cell phone or any other electrical devices that are not explosion proof or intrinsically safe.
- 3) Refueling

- a) Use only the refueling latch provided on the gasoline dispenser nozzle, - never jam the refueling latch on the nozzle open.
 - b) Do not re-enter your vehicle during refueling.
 - c) In the unlikely event a static-caused fire occurs when refueling, leave the nozzle in the fill pipe and back away from the vehicle. Notify the station attendant immediately.
 - d) Do not over-fill or top-off your vehicle tank, which can cause gasoline spillage.
 - e) Avoid prolonged breathing of gasoline vapors.
 - f) Do not "top off" tank (i.e., adding additional fuel after the automatic shutoff has tripped) in order to allow for expansion.
 - g) Place cap tightly on the fuel tank - do not use caps that do not seal properly.
 - h) If gasoline spills, make sure that it has been cleaned up before starting the vehicle or equipment.
 - i) Report spills to your supervisor and the station attendant if refueling at a commercial gasoline filling station.
- 4) Store gasoline and other fuels in approved containers such as:
- a) OSHA fire safety containers of 5 gallons size or less.
 - b) Manufacturer's installed or approved equipment fuel tanks.
 - c) Fuel depot tanks in accordance with fuel depot procedures.
- 5) Use gasoline in accordance with refueling procedures and flammable materials handling procedures.
- a) Use gasoline only in open areas that get plenty of fresh air.
 - b) Keep your face away from the nozzle or container opening.
 - c) When dispensing gasoline into a container, use only an approved portable container and place it on the ground when refueling to avoid a possible static electricity ignition of fuel vapors.
 - d) Containers should never be filled while inside a vehicle or its trunk, the bed of a pickup truck or the floor of a trailer.
 - e) When filling a portable container, manually control the nozzle valve throughout the filling process.
 - f) Fill a portable container slowly to decrease the chance of static electricity buildup and minimize spilling or splattering.
 - g) Fill container no more than 95 percent full to allow for expansion.
 - h) Place cap tightly on the container after filling - do not use containers that do not seal properly.

- i) If gasoline spills on the container, make sure that it has evaporated before you place the container in your vehicle.
 - j) Report spills to your supervisor and the station attendant if refueling at a commercial gasoline filling station.
 - k) When transporting gasoline in a portable container make sure it is secured against tipping and sliding, and never leave it in direct sunlight or in the trunk of a car.
 - l) Never siphon gasoline by mouth nor put gasoline in your mouth for any reason. Gasoline can be harmful or fatal if swallowed. If someone swallows gasoline, do not induce vomiting. Contact a doctor immediately.
 - m) Keep gasoline away from your eyes and skin; it may cause irritation. Remove gasoline-soaked clothing immediately.
 - n) Use gasoline as a motor fuel only. Never use gasoline to wash your hands or as a cleaning solvent.
- 6) Filling Containers Inside Vehicles or Pickup Beds
- a) The National Highway Traffic Safety Administration (NHTSA) has urged motorists to avoid risk of fire by placing portable gasoline containers on the ground while filling them because filling them while they are located in beds of pickup trucks or in trunks or passenger car compartments can be hazardous.
 - b) Take the portable gas container out of your vehicle and set it on the ground while filling it with gasoline.
 - c) Static electricity could cause fire to erupt while fueling when it is in your car or pickup bed, NHTSA Administrator says:
 - i. Adding to the danger is the location where these fires could occur -- at a gas station while getting fuel for your snow blower or emergency generator.
 - ii. Cold, dry days in winter increase the chance of ignition, so preventive measures are important.
 - iii. Pickups with bedliners require special concern. A bedliner is a plastic, protective lining that acts as an electrical insulator, allowing static electricity to build up on the gasoline container while it is being filled. The flow of gasoline through the pump nozzle can produce static electricity.
 - iv. During fueling, this can create a spark between the container and the fuel nozzle, igniting gasoline vapors and causing a fire or explosion. This danger also applies to other nonmetallic containers capable of building up a static charge.

- v. Reports also describe fires that resulted while portable gasoline containers were being filled in trunks and passenger compartments of vehicles, when carpeting acted as an insulator.
- d) NHTSA recommends the following safe procedures for filling portable gasoline containers:
 - i. Dispense gasoline only into approved containers.
 - ii. Do not fill a container while it is inside a vehicle, a vehicle's trunk, pickup bed or on any surface other than the ground.
 - iii. Bring the fill nozzle in contact with the inside of the fill opening before operating the nozzle.
 - iv. Contact should be maintained until the filling operation is complete.

G.3.b. Extinguishers

- 1) Extinguishers will be readily available on site. At a minimum, extinguishers will be placed as follows. (Extinguishers of greater size or inclusive types may be substituted).
- 2) Heavy Equipment will be equipped with a 5# ABC fire extinguisher rated at 2-A:10-B:C.
- 3) Fuel depots and flammable liquid storage/handling areas
 - a) 20# ABC fire extinguishers with a rating of 2-A:40-B:C will be provided within 75 feet of, but no closer than 25 feet to, all refueling depots and flammable storage areas.
 - b) 10# ABC fire extinguishers with a rating of 2-A:40-B:C will be provided within 75 feet of, but no closer than 25 feet to, all mobile fueling stations, flammable liquid transfer areas, and generators.
 - c) Where Bureau of Reclamation requirements are applicable: a minimum of two, 40 # ABC extinguishers must be on site.
- 4) Trailers, buildings and work areas
 - a) All trailers and work areas will have at least a 5 # ABC fire extinguisher rated at 2-A:10-B:C.
 - b) Extinguishers in trailers will be mounted near a clear evacuation egress point (door).
 - c) Extinguishers on site will be located at the primary entrance to the work area.
- 5) Access routes to fire extinguisher shall be kept clear at all times.
- 6) All fire extinguishers shall be inspected monthly and serviced annually.

G.3.c. Welding, Cutting, and Hotwork

- 1) General

- a) All welding and hotwork will be done in accordance with Envirocon's Health and Safety Procedures 1403.011 and 1403.012;
 - b) All welding and hotwork will be done in accordance with facility requirements.
- 2) Equipment operation
- a) Welding equipment shall be used only for operations for which it is approved, and as recommended by the manufacturer.
 - b) Workers assigned to operate or maintain oxygen/fuel-gas supply equipment and resistance welding equipment shall be thoroughly instructed in the safe use of such equipment.
- 3) Personal Protective Equipment
- a) Eye and Face Protection
 - i. Welding helmets and hand shields shall be used during all arc welding/cutting operations, excluding submerged arc welding.
 - ii. Safety goggles or glasses (with side shields) are also worn during arc welding/cutting operations. The goggles or glasses may be either of clear or colored glass, depending upon the type of exposure in welding operations. Helpers or attendants wear proper eye protection.
 - iii. Safety goggles or glasses with side shields and suitable filter lenses shall be permitted for use during gas welding operations on light work, torch brazing, or inspection.
 - iv. All operators and attendants on resistance welding or brazing equipment will use face shields or goggles, depending on the particular job.
 - b) Protective Clothing
 - i. All welders/cutters shall wear flameproof gauntlet gloves.
 - ii. Flameproof aprons made of leather, or other suitable material, must be used as protection against radiated heat and sparks.
 - iii. Leather jackets will be utilized if personnel are performing hot cutting/welding work above their shoulders.
 - iv. Nylon clothing is not permitted for welding/cutting operations.
 - v. All outer clothing, such as jumpers or overalls, should be free from oil or grease.
 - c) Respiratory Protective Equipment
 - i. When respiratory protective equipment is required, the Respiratory Protection Program shall be adhered to.

- ii. Respiratory protection will be required depending on job duration and contaminant specific personal time weighted average air sample results.
 - iii. Supplied air respiratory protection is required for cutting on lead paint until personal exposure sampling indicates exposure requiring lower levels of protection.
- 4) Gas Welding and Cutting Safety
 - a) Fuel-gas hose and oxygen hose are easily distinguishable from each other.
 - i. The contrast is made by different colors or by surface characteristics readily distinguishable by touch.
 - ii. Oxygen and fuel-gas hoses shall not be interchangeable.
 - iii. A single hose having more than one gas passage shall not be used.
 - b) When parallel sections of oxygen and fuel-gas hose are taped together, not more than 4 inches out of 12 inches shall be covered by tape.
 - c) All hose in use shall be inspected at the beginning of each working shift. Defective hose shall be removed from service.
 - d) Hoses, cables, and other equipment shall be kept clear of walkways, ladders, and stairs.
 - e) Clogged torch tip openings shall be cleaned with approved cleaning wires, drills, or other devices designed for this purpose.
 - f) Torches to be used shall be inspected at the beginning of each working shift for leaking shutoff valves, damaged hose couplings, and clogged tip connections. Defective torches will not be used.
 - g) Torches shall be ignited by friction lighters or other approved devices only. Matches, flame lighters, or hot work will not be used to ignite torches.
 - h) Oxygen and fuel-gas pressure regulators, including related gauges, shall be in proper working order.
 - i) All oxygen cylinders and fittings shall be kept away from oil or grease. Cylinders, cylinder caps and valves, couplings, regulators, hose, and apparatus shall be kept free from oil or greasy substances and shall not be handled with oily hands or gloves. Oxygen shall not be directed at oily surfaces or greasy clothes, or used within a fuel oil or other storage tank or vessel.
 - j) Flash-back arresters shall be installed on all oxygen and fuel-gas setups, at a minimum at the gauges.
 - k) Torches and hoses shall be completely depressurized (bled) prior to storage, or at the end of each shift.
 - l) Torches and hoses shall not be stored in enclosed areas (e.g., gang boxes, lockers) while connected to cylinders.

- m) Do not hang torches from the regulators attached to the cylinder.
 - n) Release the hose pressure and close the cylinder valves when work is interrupted for an extended period (breaks, lunch).
 - o) Don't leave a pilot flame burning at the tip of the torch during interruption of operations.
 - p) When working in an elevated position:
 - i. Provide a screen to keep hot metal, electrode stubs, hot metal slag, etc. from falling below;
 - ii. Provide toe boards when working from scaffolding under which workers may be passing or working; and
 - iii. Restrict access to the area below the work site.
- 5) Storage and Handling of Compressed Gas Cylinders
- a) Compressed gas cylinders shall be legibly marked with either the chemical or trade name of the gas. Such markings shall be stenciled, stamped, or labeled and are not easily removable. The marking shall be located on the shoulder of the cylinder.
 - b) Compressed gas cylinders shall be equipped with approved connections.
 - c) Acetylene cylinders shall always be used and stored in an upright position (valve end up) to prevent the acetone (a stabilizing agent) from draining into the valves or fittings. Acetylene should never be used at a hose pressure exceeding 15 psi. Above 15 psi, acetylene is extremely unstable, and the possibility of an explosion exists.
 - d) Oxygen cylinders shall not be stored near oil or grease or other highly combustible/flammable materials.
 - e) Oxygen cylinders in storage shall be separated from fuel-gas cylinders by a minimum distance of 20 feet, or by a noncombustible barrier at least 5 feet high and having a fire resistance rating of at least 1/2 hour.
 - f) Cylinders shall not be dropped, struck by objects, or permitted to strike against each other violently.
 - g) Cylinder valves shall be closed before moving cylinders, at the end of the shift, or when work is finished.
 - h) Valves of empty cylinders shall be closed.
 - i) Cylinders shall be kept far enough away from the actual welding/cutting operation so that sparks, hot slag, or flames will not reach them.
- 6) Fire Protection During Welding.
- a) Objects to be welded, cut, or heated shall be moved to a designated safe location. If this is not possible, all movable fire hazards in the work space shall be taken to a safe place.

- b) If the object to be welded, cut, or heated cannot be moved and all fire hazards cannot be removed (e.g., equipment, walls, floors, etc.), positive means shall be taken to confine the heat, sparks, and slag to protect the immovable fire hazards.
- c) Welding, cutting, or heating shall not be performed where the application of flammable paint, the presence of other flammable compounds, or heavy dust concentration create a possible hazard.
- d) Openings or cracks in floors, walls, ducts, tanks, etc., shall be closed. Where openings or cracks cannot be closed, additional precautions shall be taken to prevent sparks from penetrating the openings. The same precautions shall be taken in the presence of open doorways and open or broken windows.
- e) Approved fire extinguishing equipment shall be present in the immediate work area.
- f) Fire Watch
 - i. A fire watch shall be maintained for at least 30 minutes after completion of welding/cutting operations so that possible smoldering fire can be detected and extinguished.
 - ii. Fire watch personnel shall be instructed in the selection and use of appropriate fire extinguishers.
 - iii. Fire watch personnel shall be familiar with facilities and the procedures to be followed in the event of a fire. They watch for fires in all exposed areas and attempt to extinguish fires only when obviously within the capacity of the equipment available.
 - iv. The requirement for a fire watch may be waived when, after completion of the Welding, Cutting, and Heating Permit, it has been determined that there is no possibility of sparks, slag, hot material, etc., coming into contact with flammable or combustible solids, vapors, liquids, or residues.

G.4. Lifting Heavy Objects

Heavy objects will be lifted using appropriate machinery or enough manpower as is required. Employees will be specifically instructed to seek assistance in lifting heavy objects.

G.4.a. Lifts Using Rigging

Lifts utilizing cranes, hoists, and other similar mechanical lifting devices shall:

- 1) A competent person shall conduct a lift assessment prior to the lift.
- 2) A written assessment and lift plan shall be developed for critical lifts (refer to Site Procedure 1403.105 Hoisting and Rigging Guidelines).
- 3) A critical lift is defined as follows:

- a) A critical lift is any lift which meets the definition established for this site by the facility owner/manager.
- b) A critical lift is any lift which:
 - i. involves lifting of personnel;
 - ii. involves loads greater than 30,000 pounds;
 - iii. involves loads greater than 75 percent of the crane capacity in the boom configurations potentially required;
 - iv. involves lifts for which the path of load travel is at any point out of the view of the crane operator;
 - v. involves the use of two or more cranes or lifting devices;
 - vi. involves non-routine or unusual rigging;
 - vii. involves the potential for damage that would result in unacceptable delay to schedule or significant program impact;
 - viii. involves the potential for a significant release of hazardous materials, radioactive materials, or other undesirable conditions;
 - ix. involves the potential for unacceptable risk of personnel injury or significant adverse health impact (on-site or off-site); or
 - x. any lift which the lifting equipment operator determines to be critical.

G.4.b. Manual Lifting

- 1) Before lifting:
 - a) Determine if the object can be moved by some other means (mechanical device).
 - b) Determine if the object is too bulky and would obscure vision; if so, get another person to help carry it. When handling material with others, everyone should agree on who will act as leader and give the signals. Loads should not be released until everyone is ready. Teamwork is important.
 - c) Determine if the object is within the lifter's capability (a preliminary "heft" will indicate this).
 - d) Determine if the footing around the object is solid.
- 2) Lifting
 - a) Legs should be bent at knees, back nearly vertical, body as close to the object as possible, feet apart but not further than shoulder width. Take a firm hold and straighten knees. Back is still straight and upright. Pull load close to body and lean back slightly to keep center of gravity over feet.
 - b) Avoid twisting the body when lifting or carrying loads.

G.5. Sanitation and Hygiene

G.5.a. Drinking Water

- 1) An adequate supply of potable water will be provided on site.
- 2) Portable water containers will be capable of being tightly closed and equipped with a tap.
- 3) Water shall not be dipped from containers for drinking purposes. Single service, disposable drinking cups will be provided.
- 4) No one shall place any objects (e.g. soda pop, ice tea, etc.) in coolers.

G.5.b. Restrooms and hygiene facilities

From Table D-65.2 of 29 CFR 1926.65	
Number of Employees	Minimum Number of Facilities
20 or fewer	One.
21 to 199	One toilet seat and one urinal per 40 employees
200 or more	One toilet seat and one urinal per 50 employees

Toilet facilities (sanitary sewer w/flushing toilets, chemical toilets, recirculating toilets, or combustion toilets) including hand washing stations will be provided in accordance with 29 CFR 1926.65(n) and Table D-65.2.

H. INCIDENT AND EMERGENCY PROCEDURES

This section documents procedures to be followed in the event of incidents and certain emergencies. Where possible these have been formatted to individual sheets for response training and ready reference when needed.

H.1. General Emergency Procedures

This subsection describes procedures which are common to a variety of incidents.

H.1.a. Responsibilities

- 1) The site supervisor is responsible for the overall conduct of emergency procedures. This includes maintaining an orderly succession of supervision; making necessary reports to all concerned parties; ensuring that the causes of accidents are identified and corrected; and ensuring that injured personnel (with or without life threatening injuries) are escorted to medical treatment by the site safety officer or other supervisory personnel.
- 2) The HSO has the responsibility for ensuring that the provisions of this HASP are adequate and implemented in the field. Changing field conditions may require decisions to be made concerning adequate protection procedures. The HSO is also responsible for conducting site inspections on a regular basis to ensure the emergency readiness. The HSO shall be notified of any on-site emergencies and shall be responsible for ensuring that the appropriate procedures are followed.

H.1.b. First Aid

- 1) First Aid Kits are located in each Envirocon pickup, trailer; and decon facility.
- 2) A first aid trained individual will be on site at all times.
- 3) Emergency eye wash and showers will be located at the decon facility.

H.1.c. Evacuation Procedures

The site safety officer shall select and maintain appropriate assembly points for evacuations. These shall be posted and employees informed of their locations. At least one primary and one secondary assembly point shall be established.

- 1) When an evacuation is called for, employees shall proceed in an orderly fashion to the primary or secondary evacuation assembly points.
- 2) Turn off equipment whenever possible. Avoid leaving hazardous conditions in the process of evacuating.
- 3) Evacuate in the safest direction indicated by wind, smoke, fire, or other hazards.
- 4) Take a head count and report to the supervisor.
- 5) Do not leave the assembly area without reporting to the supervisor.

H.2. Reporting and Investigating Incidents

All incidents at the site shall be reported. It is hoped that most incidents will be small and/or near misses. It is essential that these events be reported as well more serious incidents in order to learn from them and avoid the more serious accidents.

H.2.a. Project and facility requirements

- 1) An incident is defined as follows:
 - a) A work-related injury or illness
 - b) An exposure to a hazardous substance above the allowable exposure limit
 - c) Property/vehicle/equipment damage
 - d) A uncontrolled fire or explosion
 - e) An unplanned spill or release (including air releases) to the environment
 - f) A permit exceedence
 - g) Any unexpected contact or damage to aboveground or below ground utilities
 - h) A “near miss” or an unplanned event that has a reasonable probability in resulting in one of the outcomes described above had the circumstances been different and for which modifications to management programs will reduce the probability of occurrence or the severity of the outcome.
- 2) Verbal Notifications
 - a) In addition to immediate verbal (oral) reporting of all incidents to the client’s project manager.
 - b) A “serious” incident includes the following:
 - i. Imminent danger safety violations
 - ii. Any incident involving the general public or visitors
 - iii. Discovery of potential ordnance or projectiles
 - iv. Confirmed Recovered Chemical Warfare Material (RCWM) detection
 - v. Exposure to a hazardous substance above the allowable exposure limit
 - vi. Work related injury requiring more than First Aid
 - vii. Work related illness
 - viii. Spills of hazardous material in excess of 1 gallon or Reportable Quantity (RQ)
 - ix. Any unplanned fire on the facility property

- 3) Incident investigations. An incident investigation shall be performed for all incidents for which a report is required. The supervisor and the designated HSS shall perform the investigation and shall include participation by others as necessary. The investigation is to be initiated as soon as possible after the incident.

H.2.b. Reporting Incidents

Report all unplanned, unexpected, events or changes in conditions. Some examples include:

- 1) Personnel incidents such as:
 - a) injuries,
 - b) illnesses,
 - c) first aid cases,
 - d) fights or other acts or threats of violence,
 - e) fatalities, or
 - f) any personnel injuries or incidents which might be the result of acts of other contractors, subcontractors, or facility personnel.
- 2) Accidents such as:
 - a) motor vehicle accidents (with or without damages),
 - b) equipment accidents (with or without damages), or
 - c) property damage (including fires).
- 3) New, previously unknown, or unexpected potential hazards such as:
 - a) buried drums, cylinders, or hazardous materials containers,
 - b) possible unexploded ordinance (bullets, mines, bombs, grenades, etc.),
 - c) possible chemical or biological warfare devices,
 - d) unusual soil conditions (e.g., previously disturbed soils, soils with unusual odors, soils with unusual coloration),
 - e) floating contaminants (e.g., oil, chemicals, or sheens on water).
- 4) Environmental incidents such as:
 - a) oil or chemical spills,
 - b) dead or injured wildlife on the site, or
 - c) disturbed habitats.
- 5) Objects of potential cultural or historical importance such as:
 - a) bones,
 - b) buried coins or money,
 - c) arrow heads,

- d) possible burial sites, or
- e) finding articles of any potential cultural significance.
- 6) Unauthorized personnel in work areas such as:
 - a) unauthorized workers on site,
 - b) unescorted public visitors,
 - c) media personnel, or
 - d) unescorted government visitors.

H.2.c. Procedures for Reporting Incidents

- 1) First Responder's Report
 - a) If your work is involved with the incident of interest, STOP WORK IMMEDIATELY!
 - b) DO NOT PICK UP ANYTHING YOU DID NOT DROP YOURSELF!
 - c) Ensure the safety of the area from any imminent hazards.
 - d) Report to your immediate supervisor by radio or phone if at all possible.
 - e) If you must leave the area to make a report, find someone to help secure the area if at all possible.
- 2) Supervisors
 - a) Control imminent hazards as necessary.
 - b) Ensure that injuries are being taken care of, and assign someone to escort injured employees leaving the site for medical evaluation/treatment.
 - c) Ensure that the area is adequately secured.
 - d) Ensure that the scene is not further disturbed.
 - e) Visit the accident scene as soon as possible.
 - f) Interview injured workers and witnesses as soon as possible.
- 3) Reporting requirements
 - a) Report all incidents verbally to the client as soon as the area has been secured.
 - b) Follow up with a written report before the close of business.
 - c) Follow up with a written investigation report within 48 hours.

H.3. Personnel Injury

H.3.a. First Aid

- 1) The PM (or senior supervisor on site) and/or HSO shall ensure necessary first aid or medical attention is obtained. First aid shall be provided by qualified first aid providers or site Fire Department EMTs.

- 2) If personnel need medical evaluation, ensure that a safety officer or supervisor is assigned to escort the employee.
- 3) Do not allow injured personnel to drive themselves unless a doctor determines they are fit to do so.
- 4) If a doctor prescribes medication determine if that medication limits ability to drive. Do not allow employees to drive themselves if the medication impacts on driving safety. (If an employee wants to drive themselves and has been prescribed medication that will impact on driving safety the employee can wait to take the medicine at home if the doctor allows this.)

H.4. Emergency Contacts for Site

Important / Emergency Contacts		
Fire Department		Emergency 911
Ambulance		Emergency 911
Police		Emergency 911
Hospital	Directions:	Phone:
St. Peters Community Hospital 2475 Broadway Helena, MT	See Appendix B?	406-442-2480
Work Comp	Montana State Comp Fund 5 South Last Chance Gulch P.O. Box 4759 Helena, MT 59604	<u>In Montana</u> MT State Fund (800) 332-6102 team 5 Policy: 03-193 9044 <u>In other states</u> Argonaut Insurance Claim Reporting Service (888)884-2234 Policy: WC 47-654-8210054 Effective date: 01/01/03
Envirocon Project Manager	406-544-4689	Leonard Pickett
Envirocon Site Supervisor	TBD	
Envirocon Site Safety Officer	406-544-6883	Doug Tisdell
Envirocon Corp. Dir Health & Safety	Joe Ocken	(406)-523-1194
Envirocon Loss Control and Investigations	Mel Lockridge	(406) 523-1179
Envirocon Medical Monitoring	Melissa Barkell	(406) 523-1181
WorkCare Medical Monitoring	Amy Porche	(800) 455-6155 x104
WorkCare Early Return To Work	Marsha Locke	(800) 455-6155 x109
Envirocon Corp Ofc. Missoula, MT		(406) 523-1150
ENVIROCON SAFETY HOTLINE:		800-224-7389
Agency for Toxic Substances and Disease Registry (ATSDR) for chemical exposures		404-639-0615 (emergency) 404-639-6360 / 6000 (non-emergency)

Appendix A: Voluntary Emergency Information Form

The following information is being gathered to help us respond to an emergency. **All questions are optional.** You may answer any of the questions you like or leave any blank. The original copy is sent to the Corporate safety office, and a copy will be maintained on site. If the information provided changes, you should submit a new sheet.

Employee Name (please print clearly): _____

Emergency Contacts (name as many as you like)

In the event of an emergency who should we contact to let them know? _____

What City and State do they live in? _____

What is their phone number? _____

What is their relationship to you? _____

Emergency Contact for YOU!

How can we get in touch with you for project recalls, shutdowns, emergencies etc.?

Where are you staying while on site? _____

What is the phone number there? _____

Medical Conditions

Are you allergic to any medications? ☐yes/☐no What are they? _____

Are you allergic to insect bites or stings? ☐yes/☐no What are they? _____

Do you carry treatments or medicine(s) (e.g., insulin, sugar/candy/food, bee sting kits) that needs to be given in an emergency? ☐yes/☐no What are they? _____

Where is it kept? _____

Are you or do you have:

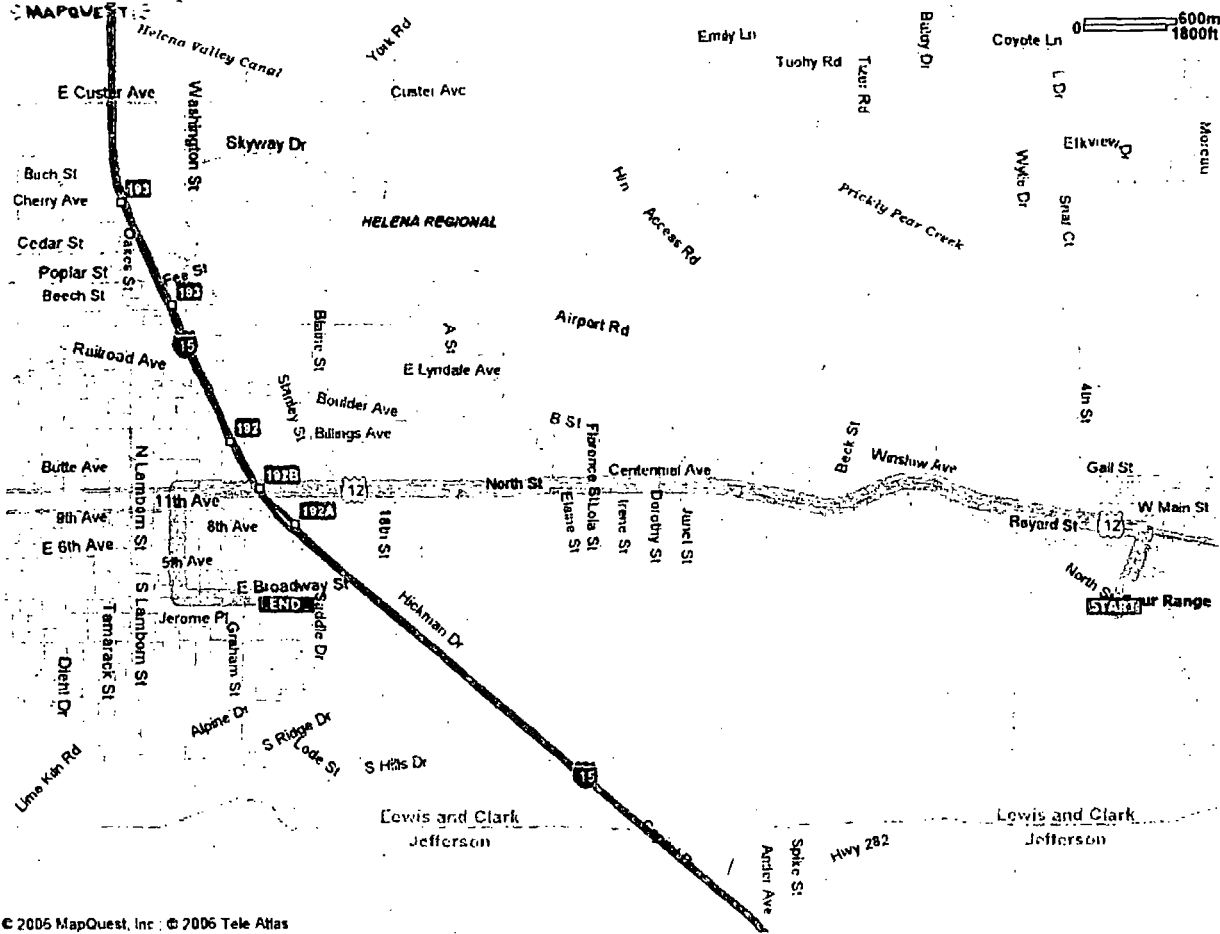
- ☐yes/☐no: Hypertension (Is it uncontrolled? ☐yes/☐no)
- ☐yes/☐no: Asthma (Is it uncontrolled? ☐yes/☐no)
- ☐yes/☐no: Diabetes (Is it uncontrolled? ☐yes/☐no)
- ☐yes/☐no: Hypoglycemia
- ☐yes/☐no: Epilepsy/seizures
- ☐yes/☐no: Fainting spells
- ☐yes/☐no: Irregular heart beat
- ☐yes/☐no: Narcolepsy (sleeping spells)

What company do you work for? _____

afety Officer's Notes:

Appendix B

Route to Hospital



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Start out going SOUTHEAST on SMELTER RD toward HIGHWAY 282.

Turn LEFT onto HIGHWAY 282.

0.3 miles

Turn LEFT onto US-287 / US-12. Continue to follow US-12 W.

3.8 miles

Turn LEFT onto N FEE ST.

0.4 miles

Turn LEFT onto E BROADWAY ST.

0.4 miles

St. Peter's Community Hospital

End at 2475 E Broadway St
Helena, MT 59601-4928, US

Total Est. Time: 10 minutes Total Est. Distance: 5.20 miles

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Attached: OSHA Engineering Survey Form

A. References

29 CFR 1926 Subpart T - Demolition (included in this procedure.)

National Association of Demolition Contractor's (NADC) Demolition Safety Manual, Revised 1989.

B. PREPARATORY OPERATIONS

B.1. Client preparations

- B.1.a. Obtain all clients, local government, or state government demolition permits prior to beginning operations.
- B.1.b. Establish hold points at critical steps of demolition. Review all hold point requirements before beginning a new phase of demolition. For example, the following tasks may be established as hold points:
 - 1) OSHA engineering surveys,
 - 2) Hazardous materials abatements,
 - 3) Structural demolition,
 - 4) Sizing and transportation.

B.2. Engineering Survey

- B.2.a. Prior to beginning demolition operations, an engineering survey of the structure shall be made by a competent person to determine the condition of the framing, floors, and walls, and possibility of unplanned collapse of any portion of the structure.
- B.2.b. Any adjacent structure where employees may be exposed or impacted by demolition operations shall also be similarly checked.
- B.2.c. A sample form for documenting this survey is attached.

B.3. Hazardous Materials Survey.

- B.3.a. Identify specific hazardous materials which must be removed prior to beginning demolition of structures. Examples would include:

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- 1) asbestos (non-friable),
- 2) asbestos (friable),
- 3) PCBs,
- 4) lead paint,
- 5) pesticides,
- 6) nerve agents,
- 7) unexploded ordinance,
- 8) containers of unknown materials.

B.3.b. Identify any other chemicals which are specifically regulated or could affect disposal of the demolition materials.

B.3.c. Ensure that the environmental compliance authority approves the sequence of removal and segregation of waste streams. Friable and non-friable asbestos sources may have different requirements.

B.4. Identify discrete rooms, buildings, processes

Identify discrete demolition areas and isolate all utilities to that area before beginning operations in that area. Shutoff by permanent disconnection, sealing with grout or other blanking systems, or lockout / tagout as appropriate. Including

- B.4.a. electric,
- B.4.b. gas or other fuels,
- B.4.c. water,
- B.4.d. steam,
- B.4.e. sewer,
- B.4.f. compressed air,
- B.4.g. chemical feed/process lines, and
- B.4.h. any other service lines.

B.5. Identify potential hazardous atmospheres.

- B.5.a. If possible, sequence decommissioning activities to drain, flush and cutoff liquid contaminants prior to entry.
- B.5.b. Sequence work to open and ventilate tanks to remove confined space situations.
- B.5.c. Spaces with potential atmospheric hazards include (but are not limited to):
 - 1) pipes,

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- 2) voids,
- 3) tanks, or
- 4) spaces.

B.6. Glass Fragmentation

- B.6.a. Glass should be removed from the structure early in the sequence. Use an excavator bucket to break windows inward for example. This avoids glass being blown outward from shifting walls, ceilings, or floors.
- B.6.b. If glass is not removed, personnel shall be protected from a fragmentation hazard covering, distance, or similar protective action.

B.7. Identify and mark all lines that must remain and/or be protected.

- B.7.a. Utilities that will be spared.
- B.7.b. Fixed fire suppression systems.
- B.7.c. Identify all drainage below demolition foundation and plug. Use grout or expandable foams. This will prevent hazardous liquids from running into drainage systems.

C. SPECIFY CONTROLS

C.1. Personal protective equipment required.

- C.1.a. Safety hazards (hard hats, safety glasses, etc.).
- C.1.b. Chemical hazards (splash suits, respirators, face shields).

C.2. Ensure adequate lighting.

This includes indoor areas where power has been cut off.

C.3. Fire prevention, fire fighting equipment.

Review site hot work procedures and obtain necessary facility hot work permits.

- C.3.a. Work area fire fighting equipment should be addressed. Charged fire hoses or 20 lb ABC extinguishers would be typical. A dedicated fire watch shall stand by at least 30 minutes after spark producing cutting operations conclude (e.g., demo saws or gas cutting torches). Sparks can smolder overnight or longer. Security should be aware of demolition hot work areas. If there is no 24 hour security provisions, risk to the facility and public must be evaluated based on the potential for smolder fires to erupt hours after cutting.
- C.3.b. If there are facility systems that will be interrupted or decommissioned ensure that provisions are made with facility manager to adequately replace the lost capacity.

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C.3.c. Demolition cutting generates a lot of hot embers. These embers may smolder for many hours or even days before catching fire. Establish fire watches during and after cutting. Soak flammable materials with water or protect them with fire blankets while throwing sparks. (NOTE: Do not leave standing water. Sparks may "skate" across these surfaces and into other unprotected areas.)

C.4. Establish working platforms and access/egress

Provide ladders, scaffolds, man lifts, safety nets, fall protection, overhead protection and other temporary structure safety requirements.

D. Public protection measures

D.1. Address public vehicular traffic exposure. Provide for:

- D.1.a. signs,
- D.1.b. barricades,
- D.1.c. flashers,
- D.1.d. flagmen,
- D.1.e. detours, and/or
- D.1.f. traffic lights.
- D.1.g. Pedestrians and children
- D.1.h. Where necessary, provide temporary walkways, overhead protection, watchmen, securing equipment, fencing and other methods of protection and denial of access.
- D.1.i. Railroads
 - 1) Notify railroads of operations.
 - 2) Obtain track and time if appropriate.
 - 3) Obtain on-track safety briefing from railroads and determine places of safety.
 - 4) Provide for train schedules, flagmen, signs, warning signals, reduced speed.
- D.1.j. Use of flashing yellow lights on equipment working in and around traffic.

D.2. Public access

- D.2.a. Work shall not be performed in any area occupied by the public unless specifically permitted by the contract or in writing by the construction manager.

D.3. Safeguards for public access

- D.3.a. When it is necessary to maintain public use of work areas involving sidewalks, entrances to buildings, lobbies, corridors, aisles, stairways and vehicular roadways, trade contractors shall protect the public with appropriate guardrails, barricades,

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temporary fences, overhead protection, temporary partitions, shields and adequate visibility. Temporary sidewalks shall be provided when a permanent sidewalk is obstructed by the demolition project operations.

- D.3.b. Sidewalks, entrances to buildings, lobbies, corridors, aisles, doors or exits shall be kept clear of obstructions to permit safe entrance and exit of the public at all times.
- D.3.c. Appropriate warnings and instructional safety signs shall be conspicuously posted where necessary. In addition, a flagger or signalman shall control the movement of motorized equipment in areas where the public might be endangered.
- D.3.d. Warning lights shall be maintained from dusk to sunrise around excavations, barricades or obstructions in plant areas. Illumination shall be provided from dusk to sunrise for all temporary walkways in both plant and construction areas.
- D.3.e. Barricades where required shall be secured against accidental displacement and shall be maintained in-place except where temporary removal is necessary to perform the work. During the period a barricade is temporarily removed for the purpose of work, a watchman shall be placed at all access points.

D.4. Protecting access

Sidewalks, sheds, canopies, catch platforms and appropriate fences shall be provided when it is necessary to maintain public pedestrian traffic adjacent to the erection, demolition or structural alteration of outside walls on any structure.

D.5. Perimeter fences

- D.5.a. A temporary fence shall be provided around the perimeter of above ground operation adjacent to public areas. Perimeter fences shall be at least six feet high. They may be constructed of wood or metal frame and sheathing, wire mesh, or a combination of both.
- D.5.b. When the fence is adjacent to a sidewalk near a street intersection, at least the upper section of fence shall be open wire mesh from a point not over four feet above the sidewalk and extending at least 25 feet in both directions from the corner of the fence or as otherwise required by local conditions.
- D.5.c. Establish an exclusion zone from other work areas using appropriate barriers and signage to keep other work tasks separate. Notify the client, other supervisors and contractors well in advance of starting work.

D.6. Guardrails

- D.6.a. Guardrails shall be provided on both sides of vehicular and pedestrian bridges, ramps, runways, and platforms. Pedestrian walkways elevated above adjoining surfaces, or walkways within six feet of the top of excavated slopes or vertical banks shall be protected with guardrails.

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- D.6.b. Guardrails shall be made of rigid materials capable of withstanding a force of at least 200 pounds applied in any direction at any point in their structure. Their height shall be approximately 42 inches.
- D.6.c. Top rails and posts may be two inch by four inch (2x4) nominal size construction grade lumber or equivalent. Intermediate horizontal rails at mid-height and toe boards at platform level may be 1x6 inch wood or the equivalent. Posts shall not be over eight feet apart.

E. HOUSEKEEPING

During the course of demolition, work areas, passageways, and stairways around buildings and structures shall be kept clear of debris.

Construction materials shall be stored in an orderly manner. Storage areas and walkways on the site shall be maintained free from dangerous depressions, obstructions and debris.

F. SCAFFOLDING

F.1. Footings

The footings and anchorage for scaffolds shall be sound, rigid, and capable of carrying the maximum intended load without settling or displacement.

F.2. Access/egress

- F.2.a. A safe means of access to and egress from the work level must be provided.
- F.2.b. Ladders used for access/egress must be secured at top and bottom. Ladder frame scaffolds must not be offset or used with other scaffold frames.

F.3. Scaffolding competent person

- F.3.a. No scaffold shall be erected, moved, dismantled, or altered, except under the supervision of competent persons.
- F.3.b. After the scaffold system is erected, it must be inspected by a competent person to ensure it has been erected safely and correctly and is compliant with the applicable OSHA regulations.

F.4. Construction

- F.4.a. Scaffolds and their components shall be capable of supporting without failure at least four times their maximum intended load.
- F.4.b. Guardrails and toeboards shall be installed on all open sides and ends of platforms more than 10 feet above the ground or floor.
- F.4.c. Planking shall extend a minimum of 6 inches and not more than 12 inches over their end supports.

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G. WORK AREA PROTECTION

G.1. Open sided floors and roofs

- G.1.a. Any open area four or more feet above adjacent surfaces shall be protected by a substantial guardrail able to resist 200 lbs. of horizontal force, a steel perimeter cable, or
- G.1.b. a warning system such as flagging or caution tape installed a minimum of six feet from the surface's exposed edge.
- G.1.c. Floor openings through which personnel or material can pass should be protected by a cover or barricade, substantial enough to withstand an anticipated load. Covers shall be anchored and identified to prevent accidental removal or displacement.
- G.1.d. Warning signs, barricades, and flagging are to be used to warn personnel of potential or hidden hazards or advise of intermittent activities which might endanger outside personnel. They are not to be used in lieu of more effective protection.

G.2. Hazardous Atmospheres

Adequate ventilation or localized exhaust may be required to satisfy the work environment requirement of OSHA (1926.55, 57). Real-time air monitoring shall be used to verify the need for ventilation.

G.3. Illumination

All construction/demolition work areas, aisles, stairs, ramps, runways, corridors, offices, shops, and storage areas where work is in progress shall be lighted with either natural or artificial illumination. Minimum illumination intensities for general construction areas shall be 5 foot-candles.

G.4. Vertical rebar

Employees shall not be permitted to work above vertically protruding reinforcing steel unless it has been covered or protected to eliminate the hazard of persons falling on it and being impaled.

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H. Attachment: Part 1926, Subpart T, "Demolition"

H.1. 1926.850: Preparatory operations.

- (a) Prior to permitting employees to start demolition operations, an engineering survey shall be made, by a competent person, of the structure to determine the condition of the framing, floors, and walls, and possibility of unplanned collapse of any portion of the structure. Any adjacent structure where employees may be exposed shall also be similarly checked. The employer shall have in writing evidence that such a survey has been performed.
- (b) When employees are required to work within a structure to be demolished which has been damaged by fire, flood, explosion, or other cause, the walls or floor shall be shored or braced.
- (c) All electric, gas, water, steam, sewer, and other service lines shall be shut off, capped, or otherwise controlled, outside the building line before demolition work is started. In each case, any utility company which is involved shall be notified in advance.
- (d) If it is necessary to maintain any power, water or other utilities during demolition, such lines shall be temporarily relocated, as necessary, and protected.
- (e) It shall also be determined if any type of hazardous chemicals, gases, explosives, flammable materials, or similarly dangerous substances have been used in any pipes, tanks, or other equipment on the property. When the presence of any such substances is apparent or suspected, testing and purging shall be performed and the hazard eliminated before demolition is started.
- (f) Where a hazard exists from fragmentation of glass, such hazards shall be removed.
- (g) Where a hazard exists to employees falling through wall openings, the opening shall be protected to a height of approximately 42 inches.
- (h) When debris is dropped through holes in the floor without the use of chutes, the area onto which the material is dropped shall be completely enclosed with barricades not less than 42 inches high and not less than 6 feet back from the projected edge of the opening above. Signs, warning of the hazard of falling materials, shall be posted at each level. Removal shall not be permitted in this lower area until debris handling ceases above.
- (i) All floor openings, not used as material drops, shall be covered over with material substantial enough to support the weight of any load which may be imposed. Such material shall be properly secured to prevent its accidental movement.
- (j) Except for the cutting of holes in floors for chutes, holes through which to drop materials, preparation of storage space, and similar necessary preparatory work, the demolition of exterior walls and floor construction shall begin at the top of the structure and proceed downward. Each story of exterior wall and floor construction shall be removed and dropped into the storage space before commencing the removal of exterior walls and floors in the story next below.
- (k) Employee entrances to multistory structures being demolished shall be completely protected by sidewalk sheds or canopies, or both, providing protection from the face of the building for a minimum of 8 feet. All such canopies shall be at least 2 feet wider than the building entrances or openings (1 foot wider on each side thereof), and shall be capable of sustaining a load of 150 pounds per square foot.

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H.2. 1926.851: Stairs, passageways, and ladders.

- (a) Only those stairways, passageways, and ladders, designated as means of access to the structure of a building, shall be used. Other access ways shall be entirely closed at all times.
- (b) All stairs, passageways, ladders and incidental equipment thereto, which are covered by this section, shall be periodically inspected and maintained in a clean safe condition.
- (c) In a multistory building, when a stairwell is being used, it shall be properly illuminated by either natural or artificial means, and completely and substantially covered over at a point not less than two floors below the floor on which work is being performed, and access to the floor where the work is in progress shall be through a properly lighted, protected, and separate passageway.

H.3. 1926.852: Chutes.

- (a) No material shall be dropped to any point lying outside the exterior walls of the structure unless the area is effectively protected.
- (b) All materials chutes, or sections thereof, at an angle of more than 45 deg. from the horizontal, shall be entirely enclosed, except for openings equipped with closures at or about floor level for the insertion of materials. The openings shall not exceed 48 inches in height measured along the wall of the chute. At all stories below the top floor, such openings shall be kept closed when not in use.
- (c) A substantial gate shall be installed in each chute at or near the discharge end. A competent employee shall be assigned to control the operation of the gate, and the backing and loading of trucks.
- (d) When operations are not in progress, the area surrounding the discharge end of a chute shall be securely closed off.
- (e) Any chute opening, into which workmen dump debris, shall be protected by a substantial guardrail approximately 42 inches above the floor or other surface on which the men stand to dump the material. Any space between the chute and the edge of openings in the floors through which it passes shall be solidly covered over.
- (f) Where the material is dumped from mechanical equipment or wheelbarrows, a securely attached toeboard or bumper, not less than 4 inches thick and 6 inches high, shall be provided at each chute opening.
- (g) Chutes shall be designed and constructed of such strength as to eliminate failure due to impact of materials or debris loaded therein.

H.4. 1926.853 Removal of materials through floor openings.

Any openings cut in a floor for the disposal of materials shall be no larger in size than 25 percent of the aggregate of the total floor area, unless the lateral supports of the removed flooring remain in place. Floors weakened or otherwise made unsafe by demolition operations shall be shored to carry safely the intended imposed load from demolition operations.

H.5. 1926.854 Removal of walls, masonry sections, and chimneys.

- (a) Masonry walls, or other sections of masonry, shall not be permitted to fall upon the floors of the building in such masses as to exceed the safe carrying capacities of the floors.
- (b) No wall section, which is more than one story in height, shall be permitted to stand alone without lateral bracing, unless such wall was originally designed and constructed to stand without such lateral support, and is in a condition safe enough to be self-supporting. All walls shall be left in a stable condition at the end of each shift.
- (c) Employees shall not be permitted to work on the top of a wall when weather conditions constitute a hazard.
- (d) Structural or load-supporting members on any floor shall not be cut or removed until all stories above such a floor have been demolished and removed. This provision shall not prohibit the cutting of floor beams for the disposal of materials or for the installation of equipment, provided that the requirements of 1926.853 and 1926.855 are met.

Envirocon, Inc.
Health and Safety Procedure

Site-Specific Procedure

Title: Site-specific Demolition Practices

PREPARED BY: Envirocon
Appendix C of HASP

SOP No: 1403.104

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Project: ASARCO Sinter Plant

- (e) Floor openings within 10 feet of any wall being demolished shall be planked solid, except when employees are kept out of the area below.
- (f) In buildings of "skeleton-steel" construction, the steel framing may be left in place during the demolition of masonry. Where this is done, all steel beams, girders, and similar structural supports shall be cleared of all loose material as the masonry demolition progresses downward.
- (g) Walkways or ladders shall be provided to enable employees to safely reach or leave any scaffold or wall.
- (h) Walls, which serve as retaining walls to support earth or adjoining structures, shall not be demolished until such earth has been properly braced or adjoining structures have been properly underpinned.
- (i) Walls, which are to serve as retaining walls against which debris will be piled, shall not be so used unless capable of safely supporting the imposed load.

H.6. 1926.855: Manual removal of floors.

- (a) Openings cut in a floor shall extend the full span of the arch between supports.
- (b) Before demolishing any floor arch, debris and other material shall be removed from such arch and other adjacent floor area. Planks not less than 2 inches by 10 inches in cross section, full size undressed, shall be provided for, and shall be used by employees to stand on while breaking down floor arches between beams. Such planks shall be so located as to provide a safe support for the workmen should the arch between the beams collapse. The open space between planks shall not exceed 16 inches.
- (c) Safe walkways, not less than 18 inches wide, formed of planks not less than 2 inches thick if wood, or of equivalent strength if metal, shall be provided and used by workmen when necessary to enable them to reach any point without walking upon exposed beams.
- (d) Stringers of ample strength shall be installed to support the flooring planks, and the ends of such stringers shall be supported by floor beams or girders, and not by floor arches alone.
- (e) Planks shall be laid together over solid bearings with the ends overlapping at least 1 foot.
- (f) When floor arches are being removed, employees shall not be allowed in the area directly underneath, and such an area shall be barricaded to prevent access to it.
- (g) Demolition of floor arches shall not be started until they, and the surrounding floor area for a distance of 20 feet, have been cleared of debris and any other unnecessary materials.

H.7. 1926.856: Removal of walls, floors, and material with equipment.

- (a) Mechanical equipment shall not be used on floors or working surfaces unless such floors or surfaces are of sufficient strength to support the imposed load.
- (b) Floor openings shall have curbs or stop-logs to prevent equipment from running over the edge.
- (c) Mechanical equipment used shall meet the requirements specified in Subparts N and O of this part.

Envirocon, Inc.
Health and Safety Procedure

Site-Specific Procedure

Title: Site-specific Demolition Practices

PREPARED BY: Envirocon
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H.8. 1926.857: Storage.

- (a) The storage of waste material and debris on any floor shall not exceed the allowable floor loads.
- (b) In buildings having wooden floor construction, the flooring boards may be removed from not more than one floor above grade to provide storage space for debris, provided falling material is not permitted to endanger the stability of the structure.
- (c) When wood floor beams serve to brace interior walls or free-standing exterior walls, such beams shall be left in place until other equivalent support can be installed to replace them.
- (d) Floor arches, to an elevation of not more than 25 feet above grade, may be removed to provide storage area for debris: Provided, That such removal does not endanger the stability of the structure.
- (e) Storage space into which material is dumped shall be blocked off, except for openings necessary for the removal of material. Such openings shall be kept closed at all times when material is not being removed.

H.9. 1926.858: Removal of steel construction.

- (a) When floor arches have been removed, planking in accordance with 1926.855(b) shall be provided for the workers engaged in razing the steel framing.
- (b) Cranes, derricks, and other hoisting equipment used shall meet the requirements specified in Subpart N of this part.
- (c) Steel construction shall be dismantled column length by column length, and tier by tier (columns may be in two-story lengths).
- (d) Any structural member being dismembered shall not be overstressed.

H.10. 1926.859: Mechanical demolition.

- (a) No workers shall be permitted in any area, which can be adversely affected by demolition operations, when balling or clamming is being performed. Only those workers necessary for the performance of the operations shall be permitted in this area at any other time.
- (b) The weight of the demolition ball shall not exceed 50 percent of the crane's rated load, based on the length of the boom and the maximum angle of operation at which the demolition ball will be used, or it shall not exceed 25 percent of the nominal breaking strength of the line by which it is suspended, whichever results in a lesser value.
- (c) The crane boom and loadline shall be as short as possible.
- (d) The ball shall be attached to the loadline with a swivel-type connection to prevent twisting of the loadline, and shall be attached by positive means in such manner that the weight cannot become accidentally disconnected.
- (e) When pulling over walls or portions thereof, all steel members affected shall have been previously cut free.
- (f) All roof cornices or other such ornamental stonework shall be removed prior to pulling walls over.
- (g) During demolition, continuing inspections by a competent person shall be made as the work progresses to detect hazards resulting from weakened or deteriorated floors, or walls, or loosened material. No employee shall be permitted to work where such hazards exist until they are corrected by shoring, bracing, or other effective means.

Activity Hazard Analysis (AHA)		
HASP Appx. D AHA #1 Asarco Smelter	Activity: Mobilization and General Site Hazards	Analyzed by: Brian Vibbert 2/1/06

Principle Steps	Potential Safety & Health Hazards	Recommend Controls
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Mobilization and General Site Hazards	<ul style="list-style-type: none"> • Equipment move, and unloading • • 	<ul style="list-style-type: none"> • Designate gate that Asarco intends incoming equipment to enter through. Make sure drivers are familiar with site access. • Offloading of equipment will be performed by qualified personnel. • Area selected for offloading shall be on the Asarco property of sufficient size to support operations. • Proper fall protection must be in place for all work at elevations \geq 6 ft. • Identification of pinch points will be outlined to the crew. As a minimum, Level D attire with leather gloves will be required for unbinding chains and off loading. • Personnel are not to stand under suspended loads. Crew must use tag lines appropriately and consistently. • Watch for slips, trips, and falls around trailers and equipment.
	<ul style="list-style-type: none"> • Heavy Equipment Hazards 	<ul style="list-style-type: none"> • Only trained and qualified personnel will operate heavy equipment. • Supervisor will review the equipment qualification form on file for each operator to ensure that only specified equipment is operated. • Equipment will be inspected before each shift and inspection will be documented. • Ground personnel and operators will be familiar with appropriate hand signals in the work area. • Manufacturer's safety and operations manual will be reviewed and followed. • All heavy equipment will be equipped with roll over protection (ROP) and back up alarms. • Personnel are not permitted inside of the boom radius of heavy equipment. This area is determined by the equipment operator and must be discussed prior to commencement of task.

Activity Hazard Analysis (AHA)		
HASP Appx. D AHA #1 Asarco Smelter	Activity: Mobilization and General Site Hazards	Analyzed by: Brian Vibbert 2/1/06

Principle Steps	Potential Safety & Health Hazards	Recommend Controls
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	<ul style="list-style-type: none"> Noise 	<ul style="list-style-type: none"> Review elements of Hearing Conservation Program. Provide annual audiograms for employees as applicable. Provide hearing protection on site. Required use of hearing protection when noise levels are at or exceed 85 dBA. Exposure to impulsive or impact noise should not exceed 140 dB peak sound level. Using engineering controls (i.e., guards, mufflers, distance) to reduce worker exposure. Conduct noise surveys on activities in question. Employer shall inform employees of high noise areas where hearing protection is required and provide the employee with hearing protection.
	<ul style="list-style-type: none"> Adverse Weather 	<ul style="list-style-type: none"> Stop work if tornadoes or heavy weather threatens. Stop work if lightning is within a five-second count of the work area (the time difference between seeing a lightning strike and hearing the sound). Stop work and proceed to a prearranged safe place of refuge if the site safety officer closes site activities for weather. Work will resume after a 15 minute period has elapsed without lightning and the Safety Manager is apprised of the situation.

Activity Hazard Analysis (AHA)

HASP Appx. D AHA #1

Asarco Smelter

Activity:

Mobilization and General Site Hazards

Analyzed by:

Brian Vibbert 2/1/06

Principle Steps

Potential Safety & Health Hazards

Recommend Controls

	<ul style="list-style-type: none"> Flying debris striking personnel 	<ul style="list-style-type: none"> Ground personnel will keep a clear radius of a machine in use. Clear radius in this case is the distance around a piece of equipment in which the operator of the equipment feels is safe for ground personnel to enter and work. Based on the skill of the operator, it may be well past the stationary operational radius of the equipment. Personnel will not attempt to dislodge stuck materials from operating machinery. Mechanic(s) will be summoned to evaluate the equipment and initiate repair. All personnel will wear ANSI approved safety glasses. Safety officer will determine if faceshields are necessary. Faceshields may be worn in addition to safety glasses, not in place of them for ground worker if any.
	<ul style="list-style-type: none"> Pinch Points or Struck By 	<ul style="list-style-type: none"> All gears and pulleys will be guarded. Do not place hands between or around edges of barge sections or cables and rigging. Align bolt holes with a picking bar or other appropriate tool. Signal operator when everyone is clear and lift can begin. Loose clothing, jewelry, and other items, which may be caught, will not be worn. Wear leather or other appropriate gloves.
	<ul style="list-style-type: none"> Hand Tool Hazards 	<ul style="list-style-type: none"> Tools will be inspected prior to use. Tools that are not in good working order will be discarded or repaired before use. Tool selection will be based on the task to be completed. Use the right tool for the job. Appropriate work rest cycles will be maintained for repetitive motion tasks.

Activity Hazard Analysis (AHA)

HASP Appx. D AHA #1

Asarco Smelter

Activity:

Mobilization and General Site Hazards

Analyzed by:

Brian Vibbert 2/1/06

Principle Steps

Potential Safety & Health Hazards

Recommend Controls

	<ul style="list-style-type: none"> Slip Trips and Falls 	<ul style="list-style-type: none"> Work areas will be visually inspected continuously for signs of poor housekeeping. Identified slip and trip hazards will be removed or guarded prior to beginning work. Appropriate illumination will be maintained in the work area Provide adequate storage for tools and equipment
	<ul style="list-style-type: none"> Torch cutting 	<ul style="list-style-type: none"> Reference Envirocon Health and Safety Code of Safe Work Practices 1403.011 section I. (1.Welding and cutting) Heavy equipment will be equipped with a 5# ABC fire extinguisher. Keep hot work at least 50 feet away from flammable liquid storage and handling areas unless specifically permitted. Obtain Hot work permits if required and post at job area. Personnel will be properly trained in the use of equipment they are using. Personnel will evaluate the proximity of any combustible materials, and any potential paths of thrown molten/burning material.
	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">

Activity Hazard Analysis (AHA)		
HASP Appx. D AHA #1 Asarco Smelter	Activity: Mobilization and General Site Hazards	Analyzed by: Brian Vibbert 2/1/06

Principle Steps	Potential Safety & Health Hazards	Recommend Controls
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	<ul style="list-style-type: none"> • Fire Protection 	<ul style="list-style-type: none"> • All trailer and work areas will have at least a 5# ABC fire extinguisher • A 20# ABC fire extinguisher will be provided within 75 feet of, but no closer than 25 feet to, all refueling depots and flammable storage areas. • Extinguishers in trailers will be mounted near a clear evacuation egress point (door) • Personnel are authorized to fight fires in the beginning stages of development and only to the extent that they judge this can be done safely. Personnel are not required to fight fires. • All portable fuel cans shall be free of deformities which threaten the integrity of the container. • All flammable storage cans of 1 gallon capacity or greater shall have self closing lids and flame arresters (i.e. safety cans). • All flammable storage containers shall be labeled as to their contents, and shall include a warning regarding flammable contents. • Gasoline engines shall not be fueled while the engine is running. • All equipment shall be fueled through funnels or spouts that prevent spillage. All spouts and funnels must be of metal construction. • All flammable fuel depot tanks sit up on site will be grounded. •
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Activity Hazard Analysis (AHA)		
HASP Appx. D AHA #1 Asarco Smelter	Activity: Mobilization and General Site Hazards	Analyzed by: Brian Vibbert 2/1/06

Principle Steps	Potential Safety & Health Hazards	Recommend Controls
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Equipment to be Used		Required Inspections		Training	
				AHA briefing, Task Briefing, Site Orientation,	
Analyzed/ Approved By:		Position or Title		Signature	
Brian Vibbert		Health and Safety Supervisor			
Briefing Records					
PRINT NAME	Signature	DATE	PRINT NAME	Signature	DATE

Activity Hazard Analysis (AHA)

HASP Appx. D AHA #2

Asarco Smelter

Activity: Sinter Plant Cleaning

Analyzed by: Brian Vibbert 2/1/06

Principle Steps

Potential Safety & Health Hazards

Recommend Controls

<p>Sinter Plant Cleaning</p>	<ul style="list-style-type: none"> • Building access • Asbestos and Metal contamination (lead, cadmium) <p><u>PELs'</u></p> <p>Asbestos 0.1 f/cc Lead 0.05 mg/m3 Cadmium 0.005 mg/m3 Carbon Monoxide 50 ppm</p>	<ul style="list-style-type: none"> • Provide for necessary lighting (ie remove wall panels if allowable). Locate trip and fall hazards such as missing guardrails or vaults. • Operation of equipment will be performed only by Envirocon qualified personnel. • Use spotters as necessary to move equipment around in confined areas. • Dust will be minimized. Dust control with water will be used as necessary. Water volume will be monitored and limited to prevent icy or wet conditions. • IRS will be on site as Asbestos Supervisor, and perform monitoring for asbestos and metals. • PPE for intrusive work with brick and debris removal will be initially performed with FF respirators or ½ face PAPRs, tyvek, and gloves. • Proper fit testing will be performed for respirator used. • Employees will have 40 hour HAZWOPER and applicable asbestos training. • Personal decontamination will be available via a HEPA vacuum or showers already provided on site. • CO alarms will be utilized in work areas identified as potentially hazardous from equipment exhaust.
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Activity Hazard Analysis (AHA)

HASP Appx. D AHA #2

Asarco Smelter

Activity: Sinter Plant Cleaning

Analyzed by: Brian Vibbert 2/1/06

Principle Steps

Potential Safety & Health Hazards

Recommend Controls

Non-friable ACM Removal	<ul style="list-style-type: none"> • Hazards Associated with ACM Removal • (determine if separate AHA is necessary) 	<ul style="list-style-type: none"> • Conduct predemolition surveys. • Stop work if you come across unknown materials. • Remove ACM separately from other materials. • Remove Non-friable asbestos using methods that will not create friable forms. • Reference Envirocon procedure 1403.108 Removal of non-friable ACM demolition practices. • Personnel will avoid creating dust • The weight of transite will be considered before work activities begin. • Personnel will plan work in a manner that will avoid breaking of transite.
	<ul style="list-style-type: none"> • Biological hazards 	<ul style="list-style-type: none"> • Be aware of fecal debris before hand working areas. • Avoid areas of accumulated animal or bird droppings. • Avoid contact with snakes, spiders, and insects. Including areas of likely habitation.

Activity Hazard Analysis (AHA)

HASP Appx. D AHA #2
Asarco Smelter

Activity: Sinter Plant Cleaning

Analyzed by: Brian Vibbert 2/1/06

Principle Steps

Potential Safety & Health Hazards

Recommend Controls

	<ul style="list-style-type: none"> • Vac Truck Use 	<ul style="list-style-type: none"> • Only qualified personnel will operate vac truck • Determine if weight of hose is not excessive for laborers performing lead dust removal. • Determine best placement of vacuum hoses to minimize trip hazards • Train additional employees on how to shut down vac trucks • Monitor CO within Sinter Building • Locate vac trucks in best area to minimize conflicts with equipment and noise hazards • Proper hearing protection of dB exceeds 85 dBA • Keep all hands away from vacuum hose inlets, do not attempt to dislodge clogged hose unless equipment is shut down
	<ul style="list-style-type: none"> • Slips, trips, and falls 	<ul style="list-style-type: none"> • Follow general work rules (Procedure 1403.011) • Work areas will be visually inspected continuously for signs of poor housekeeping. • Identified slip and trip hazards will be removed or guarded prior to beginning work. • Appropriate illumination will be maintained in the work area in accordance with HASP. • Good housekeeping practices will be maintained.

Activity Hazard Analysis (AHA)

HASP Appx. D AHA #2
Asarco Smelter

Activity: Sinter Plant Cleaning

Analyzed by: Brian Vibbert 2/1/06

Principle Steps

Potential Safety & Health Hazards

Recommend Controls

	<ul style="list-style-type: none"> • Electrocuting/Utilities 	<ul style="list-style-type: none"> • The location of all existing utilities will be marked and guarded as necessary before activities commence. • Use only qualified electricians for wiring voltages in excess of 50 VAC • Only trained and competent persons will perform electrical work. • Extension cords will be inspected daily and before use for rips, tears, or other damage. • Cords, plugs, and receptacles will be kept out of the path of water, unless approved as submersible. • GFCIs will be used on all electrical connections. • All existing Utilities will be verified deactivated before demolition work begins. •
	<ul style="list-style-type: none"> • Fall from heights 	<ul style="list-style-type: none"> • Any open edge or platform more than five feet above the ground will be protected with a guardrail capable of resisting at least 200 lbs. of horizontal force, or fall protection will be used. • Use aerial lifts in accordance with aerial lift procedures. • Administrative fall protection, fall arresting systems, or positioning systems will be inspected in accordance with site procedures by Envirocon, Inc. and subcontractor safety officers before use. • In the absence of a guardrail, barricades will be placed at least six feet from the unprotected edge. • Floor openings of a size that persons or material might pass will be protected with covers capable of withstanding any potential load. • Floor hole covers will be anchored and marked.

Activity Hazard Analysis (AHA)		
HASP Appx. D AHA #3 ASARCO Smelter	Activity: Demolition of Sinter Plant	Analyzed by: Brian Vibbert

Principle Steps	Potential Safety & Health Hazards	Recommend Controls
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Initial Survey	<ul style="list-style-type: none"> • Predetermination of hazards 	<p>A survey by a qualified person must be made to determine whether the planned work will cause:</p> <ul style="list-style-type: none"> • Any structure to collapse • Lead dust/ACM/ and hazardous material has been removed • Utilities are disconnected
Demolition	<ul style="list-style-type: none"> • Exposure to vehicular and heavy equipment traffic. 	<ul style="list-style-type: none"> • Ground personnel will wear high visibility vests. • Signs, barricades, flashers, flagmen, and other traffic control devices will be used as necessary. • Temporary walkways will be designated for outside personnel. • Only necessary personnel will be allowed in the affected area.
Contact with Utilities	<ul style="list-style-type: none"> • Electrocution 	<ul style="list-style-type: none"> • The location of all existing utilities will be marked and guarded as necessary before activities commence. • Only trained and competent persons will perform electrical work. • Extension cords will be inspected daily and before use for rips, tears, or other damage. • Cords, plugs, and receptacles will be kept out of the path of water, unless approved as submersible. • GFCIs will be used on all electrical connections. • All existing Utilities will be verified deactivated before demolition work begins.

Activity Hazard Analysis (AHA)

HASP Appx. D AHA #3

ASARCO Smelter

Activity: Demolition of Sinter Plant

Analyzed by: Brian Vibbert

Principle Steps

Potential Safety & Health Hazards

Recommend Controls

	<ul style="list-style-type: none"> • Utilities 	<ul style="list-style-type: none"> • During dropping/felling activities, care must be taken to mitigate the seismic influence of structures impacting the ground • Positively identify existing fire mains and other utilities, designated for protection by ASARCO, through drawings • Note all overhead lines as part of pre-survey of Sinter Plant • All utilities will be identified, marked, and protected from damage throughout activities. • Coordinate with local utilities for re-routing as necessary.
Work on elevated surfaces	<ul style="list-style-type: none"> • Fall from heights 	<ul style="list-style-type: none"> • Any open edge or platform more than five feet above the ground will be protected with a guardrail capable of resisting at least 200 lbs. of horizontal force, or fall protection will be used. • Use aerial lifts in accordance with aerial lift procedures. • Administrative fall protection, fall arresting systems, or positioning systems will be inspected in accordance with site procedures by Envirocon, Inc. and subcontractor safety officers before use. • In the absence of a guardrail, barricades will be placed at least six feet from the unprotected edge. • Floor openings of a size that persons or material might pass will be protected with covers capable of withstanding any potential load. • Floor hole covers will be anchored and marked.

Activity Hazard Analysis (AHA)

HASP Appx. D AHA #3
ASARCO Smelter

Activity: Demolition of Sinter Plant

Analyzed by: Brian Vibbert

Principle Steps

Potential Safety & Health Hazards

Recommend Controls

Heavy Equipment tasks	<ul style="list-style-type: none"> Heavy equipment hazards 	<ul style="list-style-type: none"> Only trained and qualified personnel will operate heavy equipment. Equipment will be inspected before each shift and documented. Ground personnel and operators will be familiar with appropriate hand signals in the work area. Manufactures safety and operations manual will be reviewed and followed. All heavy equipment will be equipped with roll over protection and back up alarms. Personnel are not permitted inside of the boom radius of heavy equipment.
	<ul style="list-style-type: none"> Overloading capacity 	<ul style="list-style-type: none"> Reference Envirocon Procedure 1403.105, Hoisting and Rigging. Load charts of all equipment will be maintained and consulted as necessary. Estimated (or exact) weights of material will be completed prior to demolition. All rigging will be inspected and capacity determined. Damaged or defective rigging will be destroyed. Lift plans will be completed for critical lifts.

Activity Hazard Analysis (AHA)		
HASP Appx. D AHA #3 ASARCO Smelter	Activity: Demolition of Sinter Plant	Analyzed by: Brian Vibbert

Principle Steps	Potential Safety & Health Hazards	Recommend Controls
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Overhead work	<ul style="list-style-type: none"> Falling objects 	<ul style="list-style-type: none"> Barricade all areas below overhead demolition. Use a spotter to control the area if necessary to prevent foot traffic below potential falling materials. Housekeeping of above ground storage will prohibit loose tools and items from edges of structures. Clean up debris from work areas daily and before moving to new areas. Items are not permitted to be dropped or thrown from above ground structures except to designated, marked, and barricaded drop zones. Daily inspections of the work area will identify loose or weakened items or sections of structure. Personnel will wear appropriate PPE including Hard Hats. Reference Envirocon Procedure 1403.102, Aerial Lifts.
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Activity Hazard Analysis (AHA)

HASP Appx. D AHA #3

ASARCO Smelter

Activity: **Demolition of Sinter Plant**

Analyzed by: **Brian Vibbert**

Principle Steps

Potential Safety & Health Hazards

Recommend Controls

- Demo torch cutting

- Follow Fall Protection concerns outlined above.
- Wear proper torch cutting leathers, gloves, and face shield
- Reference Envirocon Health and Safety Code of Safe Work Practices 1403.011 section I. (1.Welding and cutting)
- Do not allow slag to fall to lower levels without proper demarkation
- Personnel on structure will watch footing and maintain existing guardrails as long as possible
- Fall protection and a life line may be used of necessary for leading edge work.
- A spotter will be available to watch structural stability of area while bolts and hardware are being removed.
- A walking platform may be utilized to cover and support structurally unsound platform/walking areas of existing structure.
- The torch area will be equipped with a 10# ABC fire extinguisher.
- Keep hot work at least 50 feet away from flammable liquid storage and handling areas unless specifically permitted.
- Obtain Hot work permits if required and post at job area.
- Personnel will be properly trained in the use of equipment they are using.
- Personnel will evaluate the proximity of any combustible materials, and any potential paths of thrown molten/burning material.

Activity Hazard Analysis (AHA)

HASP Appx. D AHA #3

ASARCO Smelter

Activity: Demolition of Sinter Plant

Analyzed by: Brian Vibbert

Principle Steps

Potential Safety & Health Hazards

Recommend Controls

Fueling of Heavy equipment	<ul style="list-style-type: none"> • Spill and fire control 	<ul style="list-style-type: none"> • Adequate spill absorbent will be present at all times. Personnel will be trained in the appropriate use. • All nozzles, hoses, caps, and all other associated fueling material will be in good working order and properly secured after fueling is complete. • All Gasoline fuel storage areas will be both grounded and bonded during fueling operations. • Minimum 20lb ABC fire extinguishers will be present at all fuel storage/ fueling sites; appropriate signage shall also be present.
Hand demolition	<ul style="list-style-type: none"> • Noise 	<ul style="list-style-type: none"> • Awareness training in morning safety briefings. • Hearing protection required for all noisy areas (heavy equipment, electrical demo equipment, pounding, hammering, jackhammers, etc.). • Hearing conservation exams for all personnel in demo areas.
	<ul style="list-style-type: none"> • Strains from the use of tools, 	<ul style="list-style-type: none"> • Appropriate work rest cycles will be maintained. Especially in the case of repetitive tasks and extreme temperatures. • Tools will be inspected prior to use. Tools not in good working order will be discarded or repaired before use. • Tool selection will be based on the task to be completed. Use the right tool for the job. • The use of a mechanical means is the preferred method; examples include handtrucks or machines. • Proper lifting techniques will be maintained at all times.
	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •

Activity Hazard Analysis (AHA)

HASP Appx. D AHA #3

ASARCO Smelter

Activity: **Demolition of Sinter Plant**

Analyzed by: **Brian Vibbert**

Principle Steps

Potential Safety & Health Hazards

Recommend Controls

Breaking Concrete, Cutting Steel.	<ul style="list-style-type: none"> Flying debris striking personnel 	<ul style="list-style-type: none"> Ground personnel will keep a clear radius of machine as it is in use. Personnel will not attempt to dislodge stuck materials from operating machinery. All personnel will wear safety glasses in accordance with ANSI Z.87. Safety officer will determine if faceshields are necessary.
	<ul style="list-style-type: none"> Flying debris striking heavy equipment and operators 	<ul style="list-style-type: none"> Avoid violent ejection of material when using demolition attachments. Personnel will not attempt to dislodge stuck materials from operating machinery. Mechanic(s) will be summoned to evaluate the equipment and initiate repair. Operators will have windshields up and cages where applicable. Cabs will be closed when material sizing is taking place (where applicable).
	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">

Equipment to be Used

Required Inspections

Training

Heavy Equipment – Demo attachments	Building survey (before demolition) Rigging inspections before lifts. Daily or Before Each Shift	Equipment operators must obtain (Corporate Equipment operators qualifications) and must be certified by their supervisors. 40 Hour Hazwoper, AHA briefing, Site Orientation,
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Activity Hazard Analysis (AHA)		
HASP Appx. D AHA #3 ASARCO Smelter	Activity: Demolition of Sinter Plant	Analyzed by: Brian Vibbert

ASARCO Smelter

Activity: **Demolition of Sinter Plant**

Analyzed by: **Brian Vibbert**

Recommend Controls

Analyzed/ Approved By:	Position or Title	Signature
	Superintendent	
	Site Health and Safety Officer	

[illegible]

ENVIRONMENTAL PROTECTION PLAN (E.P.P.)

**Sinter Plant Demolition Project
East Helena, Montana**

Submitted to:

ASARCO LLC

Submitted by:

**Envirocon, Inc.
3330 NW Yeon Ave., Suite 240
Portland, OR 97210**

Submittal date:

February 2006

Environmental Protection Plan

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Spill Contingency Plan

A. Spill Prevention

1. Containers

- a. All containers will be kept tightly closed and sealed when not in use.
- b. All containers will be maintained in good condition suitable for maintaining integrity during the course of normal use.
- c. Materials in containers found to be leaking or in unsuitable condition for maintaining integrity will be transferred to new containers.
- d. All containers will be clearly labeled as to contents and capacity.
- e. Flammable or combustible liquid containers of less than 5 gallons capacity shall be stored in a flammable storage cabinet when not in use.
- f. Flammable or combustible liquids shall be kept in one of the following:
 - (1) The manufacturer's original shipping container
 - (2) A hand portable fire safety container (not to exceed 5 gallons)
 - (3) An above ground storage tank.

2. Fueling Procedures

- a. All fuel transfers will be monitored continuously and documented.
- b. All equipment shall be fueled through funnels or spouts that prevent spillage.
- c. All spouts and funnels must be of metal construction.
- d. All fuel transfer hoses will be maintained in good condition, and free of visible leaks.
- e. When possible, fuel transfers will not occur within 25' of the storm drains or wastewater ditches.

B. Spill Response

1. Organization and Responsibilities

- a. Envirocon shall be responsible for spills related to the scope of their work.
- b. This spill contingency plan conforms to all Federal requirements and Montana Water Act 33U.S.C. 1342.

2. Reporting

- a. **REPORT SPILLS TO YOUR SUPERVISOR IMMEDIATELY REGARDLESS OF SIZE!** Provide the following information at a minimum:
 - (1) information on material spilled,
 - (2) quantity,
 - (3) personnel injuries, and
 - (4) immediate life threatening hazards.
- b. The senior Envirocon supervisor on site shall report the spill immediately to State Of Montana's Disaster and Emergency Services (DES), 24-hour spill notification hotline (406) 431-0411.

3. Pre-Positioned Response Equipment

- a. At least one "spill kit" will be maintained on site for the purpose of cleaning up refueling, lube, or general equipment servicing spills.
- b. Kits will contain suitable sorbent materials for cleaning up petroleum spills. For petroleum spills this includes:
 - (1) Oleophilic/hydrophobic sorbent pads. Sorbent pads are appropriate for wiping up small petroleum based spills on solid surfaces. These pads are also appropriate for removing light oil sheens off of water surfaces (including accumulated water inside of storage containments).
 - (2) Granular solid sorbents (i.e., "kitty litter"). Litter is appropriate for adsorbing oils spilled on solid surfaces and/or the ground where it can be mechanically gathered up completely after sorbing spilled liquids. These sorbents are not appropriate for spills on water surfaces.
 - (3) Oleophilic/hydrophobic sorbent boom or pillows (i.e., "sausage boom"). Sorbent booms of this type are appropriate for preventing oil spills from spreading on solid surfaces. Sorbent booms can also be used for removing sheen oils or other light oils from water surfaces.
 - (4) Oleophilic/hydrophobic oil snares or mops. These devices are appropriate for removing non-spreading, heavy oils from water surfaces.
 - (5) Waste containers.
 - (6) Nitrile gloves.

4. Appropriate Response Procedures

It is not appropriate to dictate the specific response procedures that will be used in that each incident is unique. In the event of a release or spill of a hazardous material, the following general response guidelines will be followed where appropriate.

- a. Take care of injured personnel as a priority.
 - (1) Injured personnel with any indication of broken bones should not be moved.
 - (2) If an injured person is in a life-threatening situation, the life-threatening circumstances should be removed or the injured person should be moved with the injury supported as best as possible.
 - (3) First aid and/or decontamination procedures will be implemented as appropriate.
 - (4) First aid will be administered to injured/contaminated personnel.
- b. Prevent further injury or contamination
 - (1) First responders do not have the necessary equipment or support to perform high-risk tasks and should perform only those defensive, low-risk tasks that they judge can be performed with minimal risk.
 - (2) Keep non-essential persons/ vehicles out of the area.
 - (3) All personnel will act to prevent any non-essential persons from coming in contact with spilled materials by alerting other nearby persons.
 - (4) Without taking unnecessary risks, personnel will attempt to stop the spill at the source. This may involve activities such as righting a drum, closing a valve, or temporarily sealing a hole with a plug.
- c. Evaluate hazards before responding or cleanup.
 - (1) Appropriate air monitoring will be implemented by the site safety officer.
 - (2) The supervisor will promptly make an assessment of the spill / release and direct confinement, containment, and control measures.
- d. Contain the spilled materials to prevent further spreading.
 - (1) Place sorbent materials downstream of spreading spills.
 - (2) Construct a temporary containment berm utilizing onsite clay or soil.
 - (3) Dig a sump.
 - (4) Install a polyethylene liner.

- (5) Divert the spill material into a sump.
- (6) Place drums under the leak to collect the spilling material before it flows over the ground.
- (7) Transferring the material from its original container to another container.
- e. Prior to cleaning up spilled materials
 - (1) Ensure all unnecessary persons are removed from the hazard area.
 - (2) Put on protective clothing and equipment.
 - (3) If a flammable material is involved, remove all ignition sources and use spark and explosion proof equipment for recovery of material.
 - (4) Remove all surrounding materials that could be especially reactive with materials in the waste.
 - (5) Determine the major components in the waste at the time of the spill.
 - (6) If wastes reach a storm sewer, try to dam the outfall by using sand, earth, sandbags, etc. If this is done, pump this material out into a temporary holding tank or drums as soon as possible.
 - (7) Place all small quantities of recovered liquid wastes (55 gallons or less) and contaminated soil into drums for incineration, recycling or removal to an approved disposal site.
 - (8) Spray the spill area with foam, if available, if volatile emissions may occur.

C. Procedures to Prevent Offsite Tracking of Materials

1. Decontamination Procedure

- a. Equipment that has come in contact with potentially contaminated materials will receive an initial dry decontamination. The dry decontamination method will consist of shoveling, scraping and brushing all loose materials from the equipment on a decontamination pad or onto an impacted area. An industrial vacuum may also be utilized to decontaminate impacted equipment.
- b. If deemed necessary, wet method decontamination will be utilized prior to final demobilization. This will be done on a case-by-case basis after a thorough dry decontamination has been completed and equipment has been inspected.

- c. The decontamination pad, if needed, will be located adjacent to the work area. The ground surface will be prepared so that it slopes to one corner of the pad area and with a berm around the perimeter.
- d. A hole will be dug at the low end and a collection drum or sump will be installed.
- e. Liner material will be placed directly on the graded work area to extend over the berm with an opening at the sump. A pump will be placed in the sump for transferring decontamination water to the water treatment system or to a holding tank.
- f. Decontamination wastewaters will be consolidated, sampled and disposed of offsite. Analytical sampling performed will be dependent on disposal facility requirements.

D. Dust Control

Dust control is of primary concern in the execution of this work, particularly with activities involving the potential for fugitive lead dust. Generally, dust control measures may include:

- Vacuuming work areas prior starting work
- Vacuuming certain structures and/or equipment items prior to moving and/or dismantling
- Wrapping and covering certain equipment items for on site transport to processing areas
- Controlled water application in some cases
- Temporary containment structures (visqueen walls and/or curtains)
- Negative air

The primary dust control measures on this project will include vacuuming the building interiors prior to demolition and controlled water spray dust suppression during demolition.

Dust monitoring shall be conducted throughout the project by Envirocon's Site Health and Safety Manager to ensure regulatory action levels for the protection of workers and the community is not exceeded. Additional general practices to minimize and control dust may include:

- Structures will be lowered to the ground surface where feasible, rather than dropped, to minimize dust generation.
- Operational procedures will be adjusted during periods of high wind to maintain optimal dust control.

- When containers or trucks are loaded with waste materials the material shall be placed in the receptacle in a controlled manner rather than dropped from a height.
- Containers will be covered when not being loaded.
- Trucks shall tarp at the conclusion of loading operations, prior to exiting the facility.

E. Storm and Waste Water Management

The Sinter Plant is situated in an area contained by concrete, sloped to drains, which will minimize the potential for water runoff. Storm water and runoff within this area will flow to the plant water system for treatment via the HDS plant prior to discharge into Lower Lake. Potentially impacted drains adjacent to the Sinter Plant will be protected as necessary to prevent contaminants from entering the system. Storm water catch basins potentially impacted by this activity will be identified and marked. Envirocon will then install appropriate filter units in each of the identified catch basins. The filters will remove the solids while allowing the storm water to continue on to the existing storm water system (settling pond) prior to discharge.